

THE IRON AGE

THURSDAY, AUGUST 15, 1889

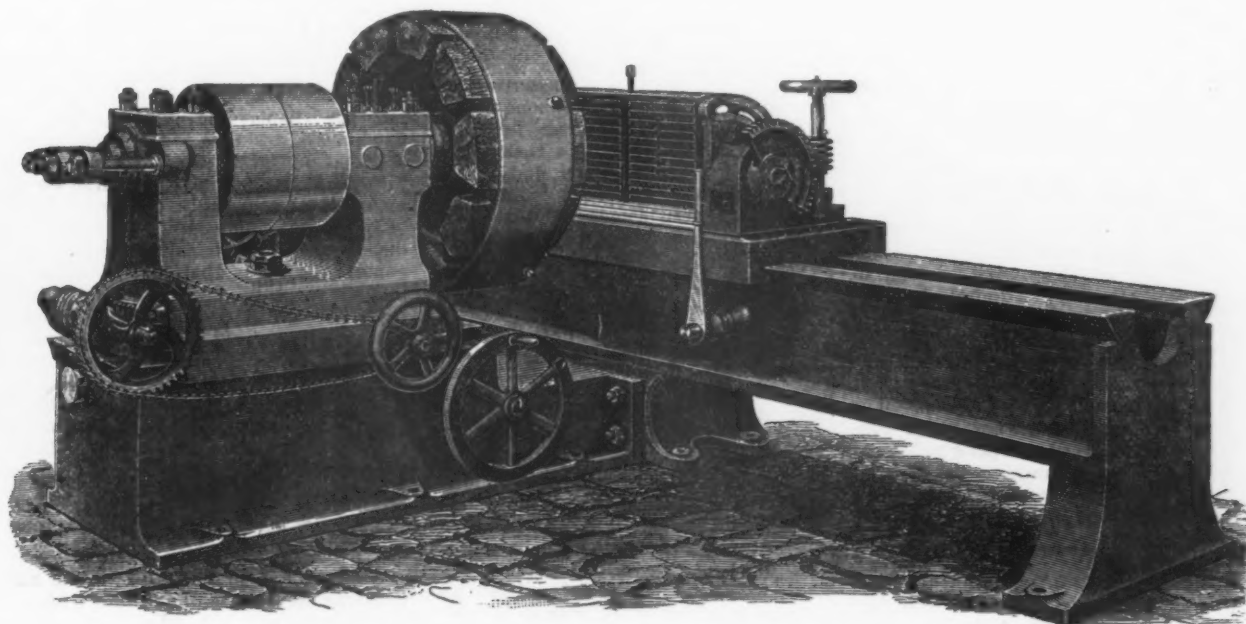
Grinding-Machine.

The admirable work done by the grinding-machine in its many forms has earned for it a wide and prominent adoption in the shop. Its simplicity, the ease of its manipulation and the accuracy of the work performed by it have made it indispensable in many classes of work heretofore either performed by hand or by other tools. The engraving we herewith present shows a grinding-machining which has been used successfully in the large works at Sheffield, England, and other places, and which is now placed on the American market. It consists essentially of a lathe-head carrying a face-plate provided with segmental pieces of the grinding material, and of a bed placed transversely across the axis of the head-stock spindle and upon which is a traveling head which passes the work across and in front of the face-plate. The

worm operated by a hand-wheel, so that the bed can be turned to any desired angle in relation to the cutting stones. By this means the work can be beveled to the angle required. The table on the transverse bed has a reversing motion operated by the lever shown, and runs any desired length across the face of the stone, the operation being similar to the ram in a shaping-machine. By removing the body-plate mounted on trunnions heavy work can be placed on the traveling bed and operated upon as desired. The large machine having a face-plate 32 inches in diameter has a traveling bed of sufficient length to grind either flat, siding, edging or beveling up to 6½ feet in length. It is apparent that by lengthening the bed work of any desired length can be accommodated. The small machine with a face-plate 26 inches in diameter will do the same work

2, was built by the Union Iron Works, of San Francisco, under a contract for \$1,017,500. She has had one trial trip. The Petrel, gun-boat No. 2, was built by the Columbian Iron Works, Baltimore, for \$245,000, and will soon undergo a third trial trip.

By the act of August 3, 1886, \$2,500,000 was appropriated, and the bureau prepared plans for nine vessels. Contracts for these were let as follows: Baltimore, cruiser No. 3, W. Cramp & Sons, \$1,325,000; will be completed about November. Vesuvius, dynamite cruiser, Dynamite Company, New York, \$350,000. Its steam trial was satisfactory. Torpedo-boat, Herreshoff Company, Bristol, R. I., \$82,750; in process of construction. The following vessels are building at the navy-yards named: Maine, armored cruiser, New York; Texas, armored battle-ship, and Amphitrite, monitor, Norfolk; the



GRINDING-MACHINE FOR GRINDING FLAT, SIDING, EDGING OR BEVELING.

cutting segments used in the face-plate are of either stone or emery, according to the nature of the material to be cut, and are secured by wedge-shaped pieces, one of which is placed between each pair of stones, and which are drawn outward so as to bind the stones firmly by means of screw bolts. The head-stock can be advanced toward or withdrawn from the work in order to accommodate articles of varying thickness, and also to compensate for the wear of the stone. By means of the hand-wheel shown under the front journal of the spindle the head-stock may be swiveled either way while the machine is in motion, thereby making a complete change of surface and increasing or diminishing the area of the grinding surface in contact with the face being cut. This motion is also applicable for concaving and convexing. It will be seen that over this wheel leads a chain passing over and engaging with a sprocket-wheel placed transversely across the back of the head-stock, the shaft of which is formed with a worm engaging with the gear carried by the head-stock pedestal. The bed to which the work is secured is mounted upon trunnions, one of which is provided with a segment gear, with which engages the

up to 3½ feet. A special attachment is provided for this machine for the grinding of reaping-machine knife sections, plane-irons, chisels, &c. Inquiries regarding the machine can be addressed to William Towell, 147 Bond street, Brooklyn, N. Y.

The New American Navy.

A statement has been prepared by Commodore T. N. Wilson, Chief of the Bureau of Construction and Repair, for the use of Secretary Tracy, showing the condition of vessels of the navy in progress of construction at the time the new Administration entered upon its duties. Under the act of March 3, 1885, \$1,895,000 was appropriated for the construction of two cruisers and two gun-boats. The Newark, cruiser No. 1, and the Yorktown, gun-boat No. 1, were contracted for with W. Cramp & Sons, of Philadelphia, at the prices of \$1,248,000 and \$455,000 respectively. The former is not to be completed until October 27, 1889; the Yorktown has just been placed on the dock in New York, to be cleaned and painted for her turning trials at Newport. The Charleston, cruiser No.

latter's engines were put in by the Harlan & Hollingsworth Company, of Wilmington, Del.; Monadnock, monitor, Mare Island, Cal.; Terror, monitor, New York. The latter will be sent to the Boston yard to receive pneumatic gear. The Puritan, monitor, will also be constructed at Norfolk.

The act of March 3, 1887, authorized the building of two cruisers and two gun-boats, one of five monitors to be constructed at a total cost of \$2,420,000, and one coast and harbor defense vessel. Under this act the following contracts were made: Philadelphia, cruiser No. 4, W. Cramp & Sons, \$1,350,000, to be completed in October; San Francisco, cruiser No. 5, Union Iron Works, \$1,428,000, also to be completed in October; Concord and Bennington, gun-boats Nos. 3 and 4, N. F. Palmer, Jr., & Co., New York, \$550,000 each, to be completed this month. Work on them, however, is reported to be progressing slowly. The Miantonomah, monitor, is building at the New York Navy Yard and is nearly completed. The construction of the coast and harbor defense vessel has been awarded to the Union Iron Works, of San Francisco, at a contract price of \$1,628,950, and the vessel is

to be completed in three years. No name has yet been selected for this vessel.

The sum of \$3,760,000 was appropriated September 7, 1888, for one armored cruiser of 7500 tons, one protected cruiser of 5300 tons, two protected cruisers of 3000 tons each and three protected cruisers of 2000 tons each; also a practice-ship for the Naval School, the latter to cost \$260,000. Plans for the 2000 and 3000 ton vessels are complete, and bids will be opened on August 22 for their construction. The 2000-ton vessels are limited to a cost of \$700,000 each and the 3000-ton vessels to \$1,100,000 each. The total of these figures more than exhausts the amount of the appropriation—\$3,500,000. The limit of cost fixed by the bureau for the 5300-ton vessel is \$1,800,000 and for the 7500-tonner \$3,500,000. The practice cruiser authorized by this act will be about 800 tons, armored and carrying a battery of rapid-firing guns. Plans for this vessel are well under way and will soon be completed.

The Bureau of Construction and Repair, the Commodore states, is at work on plans for the vessels authorized by the act of March 2, 1889, which appropriated \$4,055,000 for construction purposes, besides \$140,000 for four steam-tugs. Bids for these tugs have just been opened, but the contracts are not let. The principal vessel provided for in this last act is the armored submerged cruiser Monitor, known as the Thomas ship, its general design having been suggested by ex-Congressman Thomas, of Illinois. Plans for it are nearly completed, and its estimated cost is \$1,500,000. Two steel cruisers or gun-boats, estimated to cost \$350,000 each, will be 1200 tons each, carrying batteries of rapid-firing guns. Plans for these are well under way. There were also provided for in the act of 1889 a harbor ram, of the plan designed by Admiral Ammen, and a dynamite cruiser of the Vesuvius type. Nothing has yet been done toward the construction of these vessels. The cruiser is estimated to cost \$350,000, but no estimate is made upon the ram. The original four ships of the new navy, constructed under acts passed prior to March, 1885, and in accordance to the requirements of the naval boards of 1881-83, are the Atlanta, Boston, Chicago and Dolphin.

The United States Association of Charcoal Iron Workers have fixed as the date for their fall meeting the 17th of September, at which time the association will assemble at Milwaukee, Wis. The sessions and excursions of the meeting are to continue from the 17th to the 26th. A comprehensive programme has been arranged, embracing visits to blast-furnaces and iron-works at Milwaukee, Mayville, Fond Du Lac, Ashland, Superior and Duluth, and to iron-ore mines at Iron Ridge, Bessemer, Hurley, Tower and Ely. The excursions thus cover the Gogebic and Vermillion ranges, and will present an excellent opportunity to the members of the association and their guests to thoroughly inspect the great iron-ore districts of Wisconsin and Minnesota. The programme is so very attractive that it should insure a large attendance of the membership of the association.

The Lehigh Valley Railroad Company have purchased the right of way for an independent entrance into Jersey City. The company have been dependent upon the Pennsylvania Railroad, but the new line which is projected from Roselle will touch Newark and Elizabeth and extend to the water-front on the Hudson, which has long been owned by the Lehigh Valley. The new terminus affords ample space for depot, ferry and shipping facilities. The new road is to be called the Jersey City, Newark and Western.

The Paris Exposition.

(Editorial Correspondence.)

On the whole, the representation of the American manufacturers is moderately creditable. The total space taken is, of course, when compared with that of France disproportionately small. Some of our greatest industries have not a single representative, large or small. Others have contributed in a fragmentary way, and a very few are shown in a manner likely to convey a fair idea of the magnitude of our manufacturing operations, the skill of our workmen and the ingenuity of our inventors. What we lack in quantity we decidedly make up in quality so far as a number of individual exhibits are concerned. We have already alluded to the fact that there is little which is sensationally new in the exhibition. We may add that from the stand-point of an American there is comparatively little in the exhibit of the United States. But regarding the display of our country with the eyes of a European we have quite well lived up to our reputation for originality. We need only allude to the screw-rolling of the American Screw Company, the wonderful work done by the Simonds rolling process, the pneumatic tool for dressing stone and working metal (illustrated elsewhere in this issue), the electric welding, the different type-writers and the phonograph and graphophone to indicate how much of interest intelligent foreigners are apt to find in that section over which floats the Stars and Stripes. Like many other Americans, your correspondent has been somewhat hurt by the tinge of vulgarity which mars some of the displays, notably a very pronounced electrical one in Machinery Hall. But on the whole, considering the fact that our trade in manufactured goods and machinery is limited with France, our representation is satisfactory. Some of the most interesting things shown were evidently brought over more with the object of interesting European capital in the purchase of patents than of selling American wares. In a number of other cases the exhibits were evidently made by concerns either branches of American works or allied with them, being the fruit of American skill and ingenuity. Those who were seeking to establish new business relations or foster trade in which a foot-hold had been gained were relatively few in number. So far as your correspondent could learn, no very large sales had been effected as the direct result of participation in the exhibition. Naturally, some made favorable reports, while others were willing to confess to some disappointment. On the whole, however, few exhibitors are likely to be recouped directly through sales for their outlay. It is of course impossible to measure the benefit likely to accrue from the advertising obtained, the familiarity of a large number of people in all parts of the world with the name of the exhibitor. That of course cannot be measured in dollars and cents when striking the next annual balance-sheet.

IMITATIONS OF AMERICAN MACHINERY.

One matter which was the subject of considerable comment among American manufacturers of machinery with whom your correspondent communicated was the frequency of evidences of a wonderful talent for imitation which European producers evidently possess, and which is often coupled with astonishing brazenness. One American maker of machinery pointed out in the sections of other countries a number of machines which were almost exact copies of tools exhibited by him at Paris in 1878. He cited a case where, in order to quickly ship a machine, a lever had been cut in two and reunited

by a wrought-iron strap, because it would not fit into the box. A year afterward he found the same machine, shop number and all, in Europe, with the lever carefully made in two parts, united by the iron strap. Another manufacturer spoke at length on the same subject, adding, however, that in the case of his line the foreign makers used the American machine as a starting point. After putting them on the market, as the trade developed they made slight changes and modifications, often in the line of improvement. He was willing to acknowledge, too, that the workmanship was fully up to the American standard and sometimes above it. This prompt acceptance of American designs, to put it mildly, is not confined to any one country, although it appears that the Germans are particularly skillful and "thoughtless" when it comes to giving Americans credit for it. Your correspondent did not find that American manufacturers were particularly wrathful about these practices. In fact, they seemed to take it good-naturedly. The secret of their equanimity seemed to be that they felt confident of their ability to keep ahead, and did not feel much disturbed about the fact that others were willing to copy in place of originating.

It is possible that there is just a little too much complacency in this view of the subject. Still, the general verdict of experts in the different lines with whom your correspondent conversed concerning the display of foreign makes of machinery was that we are still ahead, and that in certain directions we are rapidly approaching the point where we can manufacture as cheaply, chiefly by the aid of special tools and appliances and by the development of systematic methods. The general verdict is that instead of falling behind we have been actually gaining since the last Paris exposition, a conclusion which it would be very dangerous to arrive at were it not warranted by the facts.

The two principal groups of exhibits of American products are in the great Machinery Hall and in the Palace of Industrial Arts. Turning to the first group we may review as follows:

AMERICAN EXHIBITORS IN MACHINERY HALL.

Along the side wall toward the main building are a series of exhibits which on the whole are not effectively placed. Beginning at the end nearest the British section, the Magnolia Anti-Friction Metal Company, manufacturers of the Magnolia metal, have a case of samples the chief interest of which lies in the accompanying tests made by officers of the United States Navy on a Beauchamp Tower machine, and by W. D. Dickey, superintendent of the Erie Basin. Near it is a group of wooden split pulleys made by the Dodge Mfg. Company, of Ishawaka, Ind., and the well-known manufactures of Curtis & Curtis, of Bridgeport, Conn.; the special emery tools of the Tanite Company, of Stroudsburg, Pa.; the Acme steel wrenches of the Capitol Mfg. Company, of Chicago; the chucks of E. Horton & Son Company, of Windsor Locks, Conn., and D. E. Whiton Machine Company, of New London, Conn., and the friction pulleys of N. W. Mason & Co., of Providence, R. I. Adjoining these is cigarette-making machinery by the J. H. Williams Company, of New York, and a display of rope by the National Cordage Company, of the same city. The Morse Twist Drill and Machine Company, of New Bedford, Mass., have a small but neat case of twist drills, behind which the Maris Machine Company have mounted a Teal portable hoist. Back of the latter C. A. Schieren & Co. exhibit link leather and ordinary belting. All of the exhibits named, including as they do a number of important

and progressive American manufactures, are small, and in some instances look as though they received little or no care. The United States Metallic Packing Company have placed on exhibition a model of the packing in use on the plunger of the water-works engines at Lawrence, Mass., and show a number of applications of its packing to marine and stationary engines and locomotives. Then follow, as the last in the section of those along the side aisle and the main wall, the shows of the Goulds Mfg. Company, of Seneca Falls, N. Y.; the Silver & Denning Mfg. Company, of Salem, Ohio, and W. & B. Douglas, of Middletown, Conn.,

New Method of Handling Steel Ingots.

Crossley Law and Charles E. Howe, of South Chicago, Ill., have invented and secured letters patent on what is designated a useful improvement in apparatus for the manufacture of steel. The invention relates to the casting and handling of steel ingots preparatory to rolling the same into railroad rails or other forms. The methods hitherto employed or generally in use, with their complexity of converters, molds, pouring-ladles and cranes, together with 75 to 100 men required in and about the pit to operate them, are well known to those skilled in the art. It

a suitable bowl, funnel or runner being used to properly guide the stream of molten metal from the pouring-hole or lip of the converter into the mold. The molds are mounted upon a movable carriage or car traveling upon a track or way extending under the converter, the car being moved to bring the molds one after another in place under the converter by a hydraulic ram or other suitable means. As each mold is filled, the converter is tipped up and the car is moved forward to bring another mold into position, thus avoiding loss of metal which in the old process adheres to the sides and surface of the ladle. In other words, the converter takes the place of the ladle. The pouring of the molten steel directly from the converter into the molds is done preferably through a pouring-hole in the belly of the converter. This is illustrated in Fig. 1.

After the entire charge of molten steel in the converter is thus poured directly from the converter into the series of molds on the movable car, the next step, according to this invention, is to move or run the mold-car out or away from the converter. As soon as the steel becomes set or sufficiently cooled the molds are turned from their erect position down into an approximately horizontal position, when the ingot is pushed horizontally through the mold and thus stripped or extracted therefrom, the ingot being at the same time and by this same stripping operation delivered in a horizontal position upon another car. The still hot ingots are by this second car conveyed directly to the furnace of the rail-rolling department, where the ingots are reheated preparatory to the rolling operation.

The molds are preferably hinged to the bed of the car upon which they are mounted, and the means which the inventors employ for tilting the molds down into a horizontal position is a hydraulic ram, the piston of which is furnished with hooks or grappling devices for engaging the upper end of the mold. This hydraulic ram is mounted in an inclined position. This is illustrated in Fig. 2. The means preferred for pushing the ingot out of the mold onto the furnace-car is a similar hydraulic ram mounted in a horizontal position. After the ingot is thus extracted from the mold and delivered upon the furnace-car, the molds are again lifted or turned into their upright position on the car by means of the same hydraulic ram by which they were lowered. The number of molds upon each car may be varied; but five molds upon each car are preferred, so that a series of ten molds upon two cars coupled together and operated as one will receive the entire charge of the converter.

By this invention Messrs. Law and Howe propose to not only entirely dispense with the labor of the pit men, the huge pouring-ladle, the cranes for receiving and handling the pouring-ladle, the pit, the lifting-cranes for removing the ingots and molds from the pit and replanting the molds in the pit, but they further claim that they are enabled to perform all the necessary steps and deliver the ingots into the rail-rolling furnace within a period of about ten minutes from the time the steel is poured from the converter into the mold, so that the ingots are still in a very hot condition when delivered into the furnace. For this reason the ingots would require less reheating by this method than by the old process, and a considerable saving in time and fuel is thus effected. Another material advantage incident to the direct-pouring plant is that the molten steel may be more readily kept at the proper temperature and fluidity for pouring in the converter than in the pouring-ladle heretofore in use, and the loss of metal or imperfect ingots incident to any delay are avoided.

The inventors further state that their experiments with the pouring-hole in the

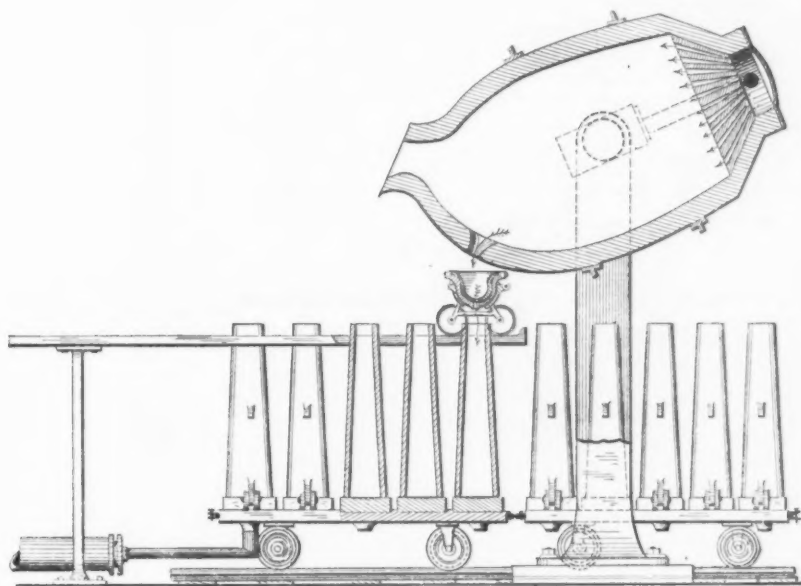


Fig. 1.

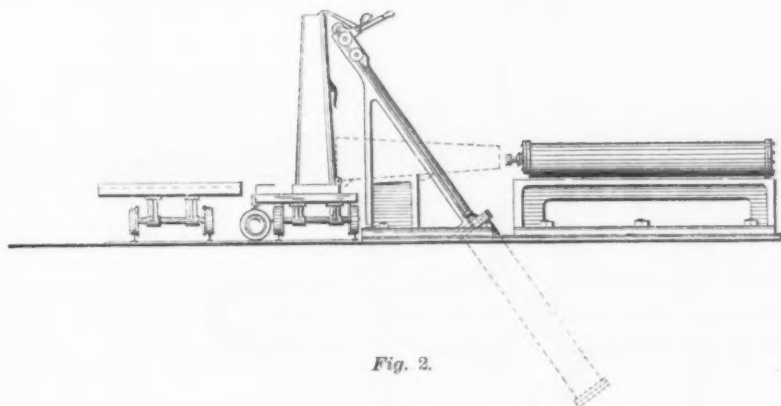


Fig. 2.

NEW METHOD OF HANDLING STEEL INGOTS.

whose products, practically in the same line, are well and widely known at home. The latter concern have in a neat way a hydraulic ram at work. The only novelty noticed by your correspondent was Schrankel's flexible piston-rod and elbow of the first-named concern.

The dry-dock now being constructed at the navy-yard, New York, will be ready to be turned over to the Government in October. The dock will be over 500 feet long, 150 feet longer than any existing government dock, and will cost, when completed, \$565,000. This will give New York two superior docks. The dock at the Norfolk Navy Yard will be opened about September 1. The cost of the dock will be \$496,000, and like the dock at New York it will be 500 feet long.

is the object of this invention to provide a plant or means of casting heavy steel ingots and of handling the molds and ingots preparatory to the reheating and rolling or future manipulation of the ingots, whereby the danger of the workmen, the excessive heat to which they are exposed, and much of the labor and expense incident to the old plant may be avoided and the ingots cast and handled with great speed and facility; but more particularly to provide a plant whereby the pit, the pouring-ladle, and the cranes for transferring and handling the pouring-ladle and for handling the ingots and molds, as well as the labor of the force of about 65 pit men, crane men and ladle repairers may be entirely dispensed with.

In this plant, no pit or pouring-ladle being employed, the molten steel is poured directly from the converter into the molds,

bulge of the vessel were made with a 7-inch hole in the shell, tapering to 2 inches inside the lining of the vessel. With the metal poured from this hole not an ounce of slag escaped, which would

it can be easily remedied by turning the vessel sufficiently to allow the blast to touch the iron and thus agitate it. But as iron has a strong affinity for spiegel it is not likely that any difficulty in this direction will be

Rolling Bars and Rails from Molten Metal.

In our issue of July 11 we described and fully illustrated the Norton process of

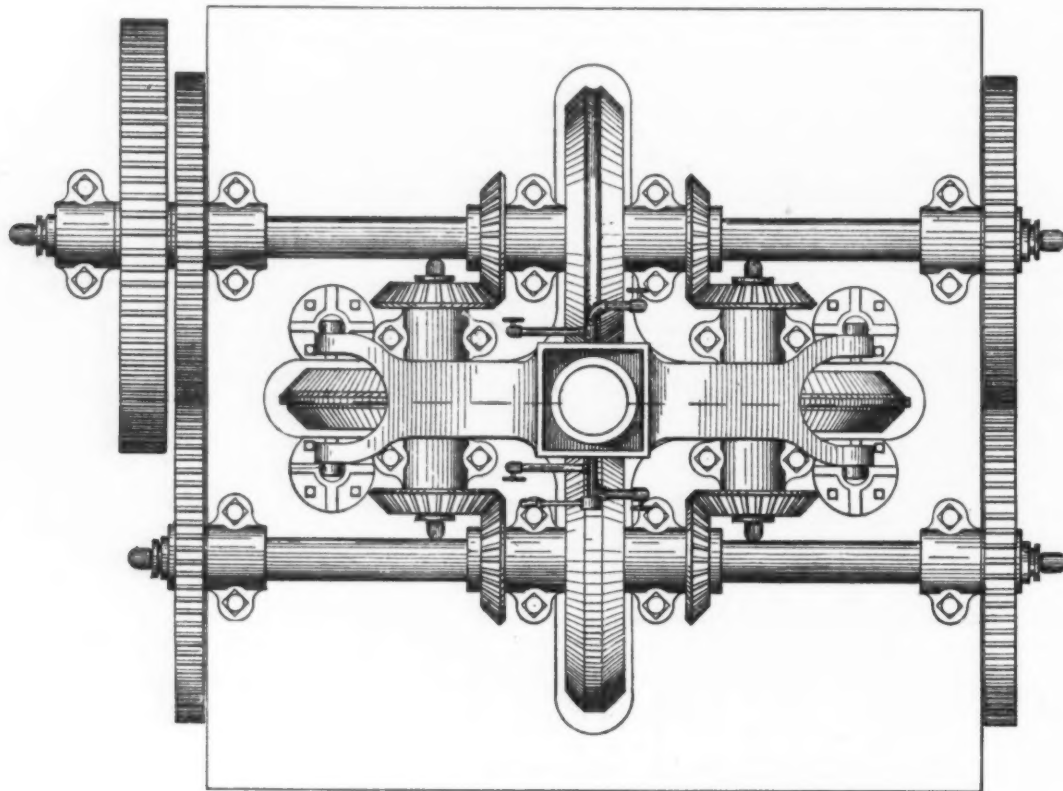


Fig. 1.—Plan.

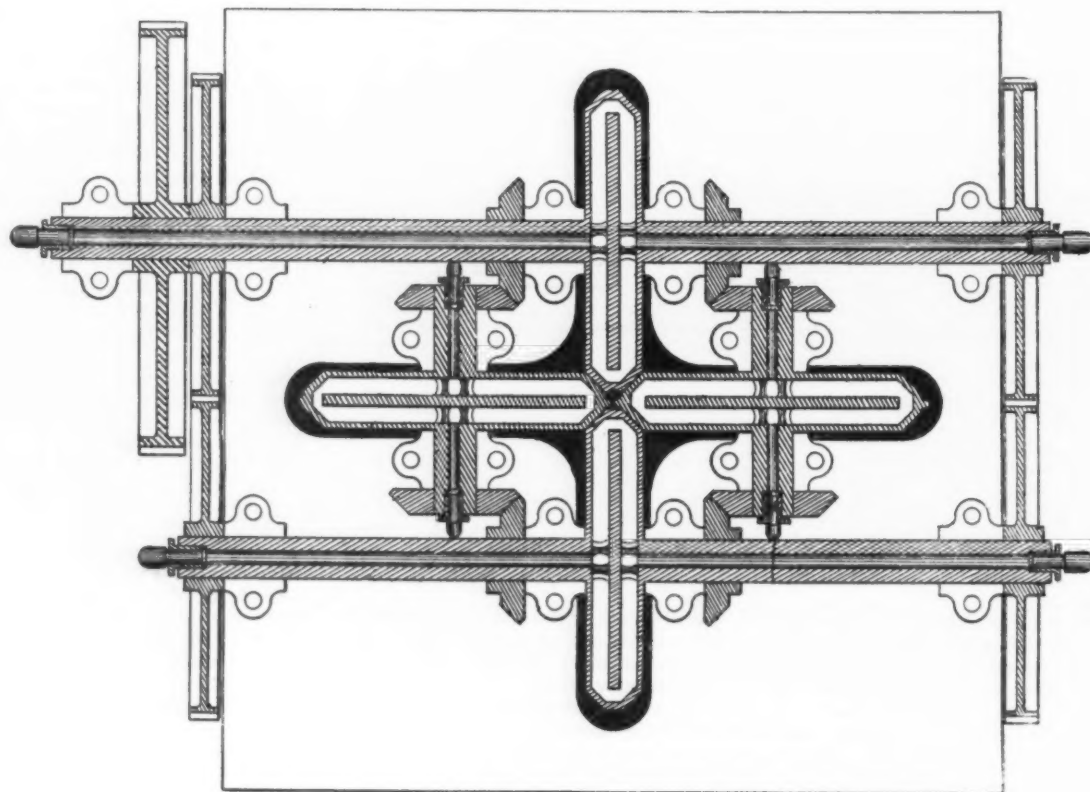


Fig. 2.—Sectional Plan through Rolls.

ROLLING FLUID METAL.

seem to prove the success of this method of pouring. It is possible that an objection may be made based on a probable deficiency or lack of thorough mixing of the spiegel, but it is claimed that if this occurs

encountered. The patentees inform us that they are negotiating with steel manufacturers for the introduction of this process, and expect to have it in practical operation in one or more works at an early day.

rolling thin sheets of solder from the molten metal. In brief, this process consisted in leading the metal from melting-pots to a reservoir placed centrally between two rolls revolving toward each other.

The distance separating the surfaces of the rolls from each other was, of course, governed by the desired thickness of the sheet of solder produced. The molten metal was fed from the reservoir in a thin flat stream to and between the revolving

operation and its success is proved. How far this method may be carried it is simply impossible to form even a conjecture of, but that it may be extended considerably further than the mere making of thin sheets of solder is,

while it is just in the act of setting, thereby improving its character and quality and rendering it dense and homogeneous throughout.

The molten metal is poured in a continuous solid stream between a series of

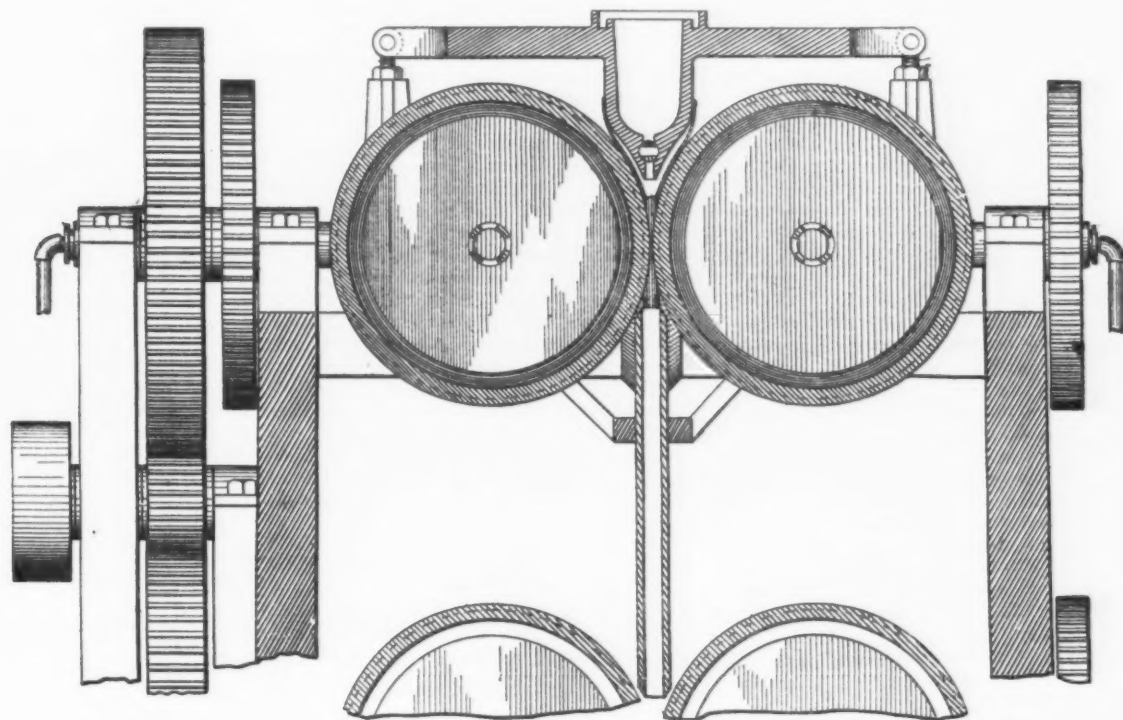


Fig. 3.—Vertical Section.

rolls, in its passage between which it was solidified to such a degree as to maintain its form after leaving the rolls. We also stated that the process had passed the experimental stage and was in successful operation at the can works of Morton Brothers, Chicago. This statement we wish to

we think, proved. It is evident that the process will prove to be inoperative when the section of metal passing between the rolls is so large that the solidified wall of metal formed upon the outside has not the strength sufficient to maintain the shape against the pressure of the fluid mass contained within the walls. Slow rolling and the vertical drop from the rolls both tend to prevent this distortion, but exactly how far the process may be carried, as regards size alone, is a matter to be determined by experiment. It is also apparent that certain shapes, such as T's, angles and channels, would come from the rolls in a more perfect form than would the same mass of metal in a cylindrical bar, for the simple reason that the thin layer of solidified metal on the exterior would have less to resist in the former than in the latter case. The important factors controlling the rolling of large sections are time and temperature. The passage of the stream of molten metal between the rolls may be so retarded as to permit the forming of a shell having the requisite strength, or the form upon issuing from the roll may be artificially cooled. The limit beyond which it is not possible to pass cannot be defined.

rolls, four in number, as shown in the plan and sectional plan views, Figs. 1 and 2, having their axes arranged in the same horizontal plane, and having a pocket or space between their peripheries at their common meeting point for the reception of the stream of metal. As the metal passes between the rolls it is compressed by the wedging action of the latter, and at the same time set or chilled by contact with the rolls. The rolls are kept cool or at a constant temperature by a stream of water flowing through them, so as to properly chill or set the stream of metal passing between them.

The pouring-bowl or nozzle is arranged directly over the meeting point of the rolls, so that the stream flows in a direction tangential to all the rolls. This is shown in the vertical section, Fig. 3. Each roll thus comes in contact with the molten metal only at a single point, so to speak, of its periphery, thus making it practicable to easily keep the rolls at the proper temperature for chilling or setting the molten metal passing between them. The rolls are revolved at a sufficiently great surface speed, in respect to the velocity of the stream of molten metal and in respect to the space between the rolls or the size of the bar produced, to prevent the metal collecting or damming up in the space between the rolls. This plan of doing away with a large surface-contact between the metal and the rolls prevents the rapid heating of the rolls, which would render

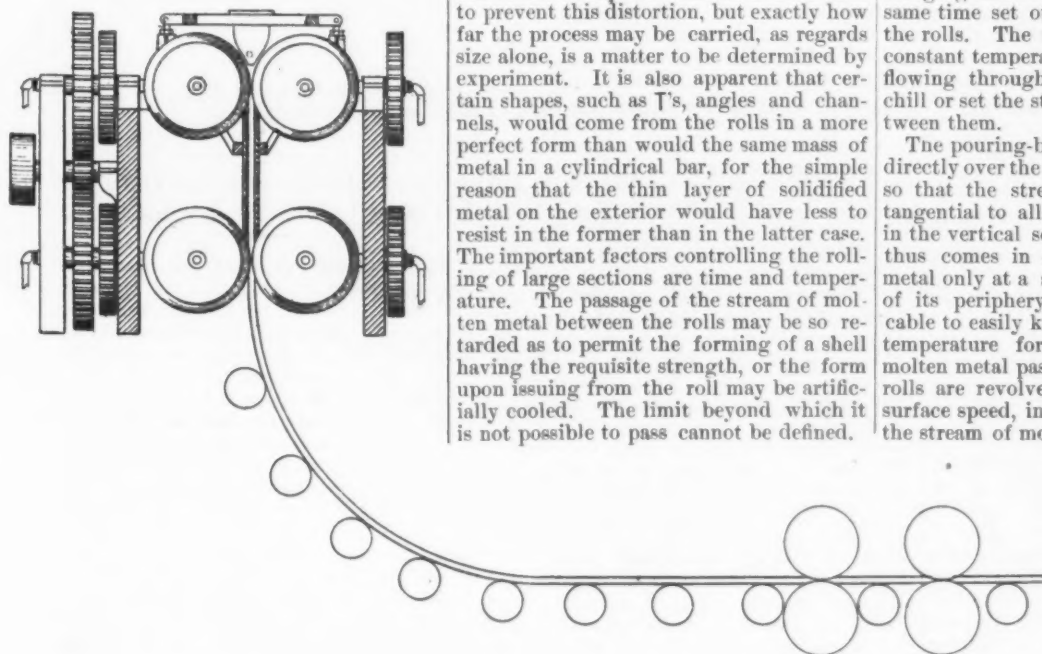


Fig. 4.—Elevation through Both Sets of Rolls and Carrier.

emphasize, since there has been more or less skepticism manifested, not particularly regarding this process, but regarding all methods as a class which claim to produce solid forms direct from molten metal. The process then described is in practical

We this week present drawings showing the apparatus for making bars or railroad rails and for making sheet-metal. In this process of making rails the molten metal is compressed, or subjected to pressure, while it is still in the fluid state or

it difficult to keep them properly cooled, and would also tend to so chill the metal before it reached the meeting point as to subject the apparatus to great strain and to require great power to revolve the rolls. The compressing and rolling action of the

rolls upon all sides of the fluid metal imparts to it a superior texture or grain and thereby increases its strength.

Another important feature of this process consists in the employment of another series of rolls (Figs. 3 and 4) arranged directly below the first series, which serves to further chill, compress, shape and roll the rail as it issues from the upper rolls. The continuous bar produced is delivered from the second set of rolls to a horizontal carrier by an intermediate curved conveyor consisting of a series of rollers arranged on a curve, as shown in Fig. 4. As the rail or bar is conveyed out horizontally, it may, while still hot, be passed through finishing and straightening rolls and further rolled to a greater or less extent, as may be considered necessary. The rolls are operated by gearing arranged as plainly shown in the drawings.

Fig. 5 shows in plan an apparatus for rolling sheets from molten metal. In this case provision is made for governing the space between the revolving rolls (which are similar in principle to those described in our article of July 11), so that the sheet-metal produced may be made of uniform thickness throughout, and not be subjected to variations due to the expansion or contraction of the rolls, the springing of the frame-work, or other causes. This end is accomplished by providing each of the metal rolls with a pair of collars or peripheral faces which bear against each other, so that the working faces of the two rolls cannot crowd together when the rolls expand by the heat. Between the collars and working faces of the rolls are grooves or recesses which receive any excess of metal due to any variation in the rate at which the molten metal is poured between the rolls. This construction is shown by the drawing Fig. 5.

Acting in connection with these rolls is a pair of finishing-rolls placed below them and to which the sheet of metal is led by a shute. These rolls are so placed as to turn the sheet in a horizontal direction. The second rolls serve to finish the sheet while it is still at a comparatively high temperature.

These machines are the invention of Edwin Norton and John G. Hodgson, of Maywood, Ill., and are controlled by the Norton Fluid Metal Rolling Company, of 46 River street, Chicago, Ill.

Blast-Furnace Management.

We make the following extracts from an excellent article on this subject in the *Journal of Charcoal Iron Workers*:

We are not among those who see in the near future a necessary and radical geographical change in the location of the iron-producing industry beyond what the natural movement of population and business will encourage. While certain sections of the country are developing more rapidly than others we must remember that the whole country is growing, and with this growth the demand for iron and steel is augmenting in even greater ratio than the population by reason of new adaptations. There is therefore work for the old as well as for the new plants, unless the patriarchs refuse to meet the advances made by the younger enterprises. The older districts have several advantages which give them a strong position. Established trade, convenient markets, abundant labor, ample capital and little or no interest to pay on investment are matters of grave importance to be overcome by new plants, which must establish a trade, force the product into distant markets, train labor and pay large interest on bonds, and these obstacles can only be overcome by improved constructions and advanced practice.

If the older enterprises are content to follow in well-worn ruts because the

original proprietors (often the ancestors of present owners) accumulated wealth thereby, and if the direction or management, or both, fail to take advantage of the changed conditions of trade, they must expect to be crowded out, and crowded out they will be. There are a few localities or special works possessing unusual facilities which may for a time apparently be unaffected, but the time will come when they, too, must succumb. Instead of complaining that other furnaces have richer ore, the management and directors of these older-established plants need to abandon the practice of buying rock, clay, sand or gravel as ore. A large proportion of the local supplies of ore used at many of these plants can be enriched with economy, or high-grade ore used advantageously as mixtures. A careful study of the chemical and physical characteristics of the fuel used will assist greatly in obtaining better results. While it may be impracticable or injudicious to entirely remodel some of the older plants, there are few but what can be materially helped by the addition of some of the features which assist the newer furnaces to be such active competitors.

We know of one plant, well situated for obtaining an abundance of good ore from

to intelligent, progressive managers who are sustained by the owners. These last are not the furnaces which are expected to be speedily wiped out of existence.

We are not slow to recognize the rapid advance being made in comparatively new sections, and we rejoice to see a proper development of local resources and the establishment of new industries, but in some of these districts the most foolish predictions are made—predictions which can only be explained by gross ignorance or falsehood, and which will result in injury to the sections whose praise is sounded. The race for pre-eminence is not to be a one-sided affair. We have pointed out some weak points which prevail among a portion of the older-established plants, and indicated what we believe to be a remedy. The newer plants must be equally vigilant and progressive, for a modern construction can, under inefficient management, lose as much money for its owners as an ancient works; imperfectly prepared ores or unsatisfactory fuel are as costly and troublesome in one section as another, and a furnace plant which has no working capital and interest on a heavy debt to meet is as certain of failure in one part of the country as in another, whether the

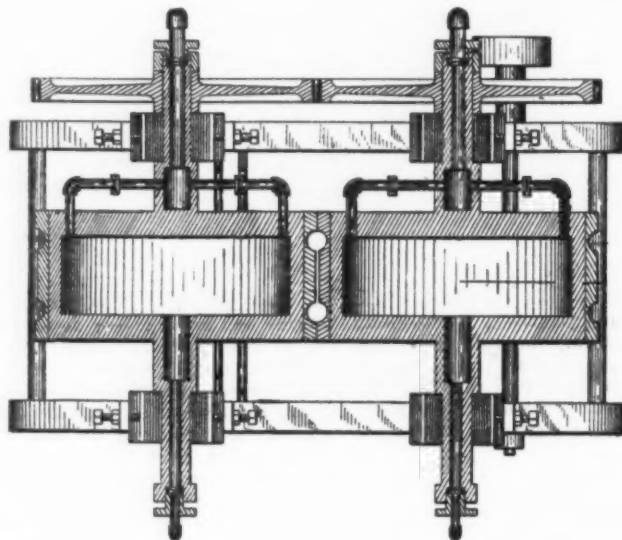


Fig. 5.—Sectional Plan of Machine for Rolling Sheets.

the owners' mines, which was blown out twice and banked down five or six times in a year for want of ore, and the material furnished was very imperfectly prepared. Another furnace, operated by a corporation with ample capital, has the reputation of receiving a large part of its burden from ores refused by other furnaces, which are bought under the supposition that they are cheap. We could instance a manager who asserted with candor that he doubted if good chilling car-wheel metal could be made if anything but the wooden blowing-tubes and open tuyeres were used, and another was positive that no furnace would work well with charcoal which had not the old saucer-shaped boshes. A man whose title was general manager of a blast-furnace suggested to his superintendent the propriety of sweeping out the inside of the hot blast-pipes while the oven was cooled down to clean the outside of the pipes and repair some leaks. We need not repeat similar statements to emphasize our assertion that some of the older-established furnaces have more to fear from their owners or managers than from any new competition. We note others improving their plants, securing better-prepared ores or enriching the mixtures, studying the fuel problem with care, the direction of the operations being confided

original projectors make money off a contingent land speculation or not.

The extensive plant of the Spreckels Sugar Refinery, in Philadelphia, is to be duplicated after the present buildings are completed, about the 1st of September. This addition, it is announced, will give the doubled refinery a capacity for producing 4,000,000 pounds of sugar daily. It will also increase the amount of capital invested to about \$4,000,000 or \$5,000,000. The contract cost of finishing the first set of buildings, independent of the improved and costly machinery, is estimated at about \$1,500,000. The buildings being very largely of iron, no less than 17,000 tons have been introduced. Greatest of all is the filter-house, 325 feet long. The boiler-house is 260 feet long and 86 feet high. The warehouse is an eight-story building.

The opening of the Poughkeepsie Bridge has not increased the coal traffic. All the coal-carrying railroads, except the Lackawanna, have completed connections from the coal fields to the new bridge, but the railway system east of the bridge is not yet perfected so that all desirable points in New England can be reached.

Poor's Railroad Statistics.

From advance sheets of the introduction to Poor's Manual for 1889, of which we have been favored with copies, we take the following extracts:

The total number of miles of railroad in the United States at the close of 1888 was 156,082, of which 7028 miles were constructed during the year—the rate of increase being 4.7 per cent. The mileage of lines making returns of their share capital and funded and floating debts equaled 154,276.

The share capital of the mileage completed at the end of 1888 equaled \$4,438,411,342, against \$4,191,562,029 in 1887, the increase equalling \$246,849,313, the rate of increase being about 5.9 per cent.

The funded debts of all the lines at the close of the year aggregated \$4,624,035,023, a sum \$437,091,907 in excess of the total of 1887 (\$4,186,943,116), an increase of nearly 9.5 per cent.

The other forms of indebtedness of the several companies at the close of the year equaled \$306,952,589, against \$294,682,071 for 1887, the increase being \$12,270,518. The total share capital and indebtedness of all kinds of all the roads making returns equaled at the close of the year \$9,369,398,954, an increase in the year of \$696,211,738 over the total of 1887 (\$8,673,187,216), the rate of increase for the year being about 8 per cent.

The cost per mile of all the roads making return as measured by the amount of their stocks and indebtedness equaled very nearly \$60,732, against \$58,603 for 1887.

The gross earnings or receipts of all the lines (including elevated railroads) from which returns were received for the year equaled \$960,256,270, of which \$251,356,167 were received from transportation of passengers; \$639,200,723 from transportation of freight, and \$69,699,380 from the transportation of mails and express matter, profits of leased lines and other miscellaneous sources of revenue. In the latter sum are included the gross earnings of elevated railroads.

The gross earnings of all the lines for the year ending December 31, 1887, equaled \$940,150,702; the increase for the year 1888 equalling \$20,105,568, or 2.14 per cent. The earnings in 1887 from transportation of passengers equaled \$240,542,876; from freight, \$636,666,223; from transportation of mails and express matter, &c., \$62,941,603, against \$69,699,380 for 1888.

The earnings per mile from which full returns were received in 1888 equaled \$6540, against \$6861 for 1887, the decrease equalling \$321 per mile.

The net earnings of all the lines for 1888 equaled \$301,631,051, against \$334,989,119 for 1887, the falling off equalling \$33,358,068, the rate of decrease being about 10 per cent.

The amount of interest paid in 1888 equaled \$207,124,288, against \$203,790,352 in 1887, the increase being \$3,333,936, the rate of increase equalling more than 1.63 per cent.

The amount paid in dividends in 1888 equaled \$80,243,041, against \$91,573,458 in 1887, the falling off equalling \$11,330,417, the rate of decrease being about 12.4 per cent.

The number of persons transported in 1888 by all the lines was 451,353,655, against 428,225,513 for 1887, the increase for the year being 23,128,142, the rate of increase equalling 5.4 per cent.

The number of passengers carried 1 mile in 1888 equaled 11,190,613,679, against 10,570,306,710 for 1887, the increase equalling 620,306,969 persons carried 1 mile, the rate of increase equalling very nearly 6 per cent.

The distance traveled by each passenger in 1888 equaled 24.78 miles; in 1887, 24.68 miles.

The amount received per passenger per mile equaled 2.246 cents in 1888, against 2.276 cents in 1887. Had the passenger rates for 1887 been maintained for 1888, the earnings from this source would have equaled \$255,034,086, a sum \$14,491,210 greater than that received.

The number of tons of freight transported on our railroads in 1888 equaled 589,398,317, against 552,074,752 tons in 1887, the increase equalling 37,323,565 tons, the rate of increase being about 6½ per cent. The value of the tonnage moved in 1888, estimating its value at \$25 the ton, equaled \$14,633,957,925.

The number of tons transported 1 mile in 1888 equaled 70,423,005,988, against 61,561,069,996 tons moved 1 mile in 1887, the increase of service performed for the year equalling 8,861,935,992 tons moved 1 mile, the rate of increase being about 14.4 per cent.

In point of importance the railroad interest now takes precedence of all other industries or enterprises. Its magnitude is greater than any other interest in the world, and it has become so thoroughly a part of the economic system of the republic as to be second only to the Government itself.

In order to show how closely interwoven are the interests of railroad stockholders and the working classes of the country, a few calculations are herewith submitted:

If we estimate that in the operation of our railways there are employed in prosperous times an average of 6 persons per mile of road, it would show a total, on the basis of our present mileage, of more than 936,000 persons regularly employed in connection with that single interest, and if to this number we add 780,000—a number representing an average of 5 to the mile—as the number of persons employed in connection with all those industries which are directly affiliated with and dependent on our railway system, such as locomotive and car-building establishments, rail-mills, &c., we have a total of nearly 1,716,000, or an average of 11 to the mile of railroad. Assuming that each of these would represent a family averaging 5 persons, we have an aggregate population of 8,580,000—nearly one-seventh of the total for the country at large—of which 90 per cent. are actually dependent on the railway system for the sustenance of life. If we allow, as the average rate of wages of those employed in operating, say \$450 per annum, and for those employed in locomotive-building, &c., say \$500 per annum, we have a total pay-roll of \$911,200,000 per annum, of which at least \$500,000,000 is directly chargeable to operating account, while the remainder is for account of betterments, improvements and new construction. Add to this the amount paid to laborers engaged in construction in such a year as 1887. In that year there were built new roads whose aggregate length was 12,984 miles. If we take, as the average cost of labor in grading, track-laying, &c., for each mile of this total, say \$10,000, and allow the average daily wages of laborers to be \$1.50, with, say, 100 laborers of all classes to each mile, this would show the average time for the completion of a mile of railroad to be 67 days. On this basis the construction of 12,984 miles of railroad would give steady employment for 300 days in the year to an army of 289,976 laborers, whose total earnings would be \$129,840,000.

This gives a total of 2,006,000 persons, to which we will add 44,000 as the number whose labors are stimulated by the employment of the 289,976 last mentioned, making a total of 2,050,000, representing families numbering in the aggregate 12,250,000 persons. To maintain this number there would be expended by railroads and others under the above calculations at least \$1,040,000,000 per annum, or very

nearly \$3,000,000 for each day in the year. The regular expenditure of more than 90 per cent. of this vast sum stimulates other industries, and in this manner the volume of general business is increased in progressive ratio.

In these calculations no account has been taken of the large number of people forming the proprietary interest of this vast aggregation of capital, which comprises people in all classes and in all occupations, and scattered throughout all parts of the country.

The New York Central Railroad Company have 10,000 stockholders, whose average holding is about \$9000. If we take that sum as representing the average holding of all stock and bond holders in the country, the total number of such would be over 1,000,000, representing more than 5,000,000 persons with important interests in the success of the railroad system.

From these deductions a general idea can be gathered of the magnitude of the railroad interest, and how fast and widespread is the interest of our people in that system.

During the past ten years the following percentages of profit have been distributed to holders of the share capital of our railroads. In 1879 the dividends paid averaged 2.5 per cent. of the total amount of capital stock outstanding; in 1880, 2.8 per cent. was paid; in 1881, 2.9 per cent.; in 1882, 2.91 per cent.; in 1883, 2.75 per cent.; in 1884, 2.48 per cent.; in 1885, 2.02 per cent.; in 1886, 2.04 per cent.; in 1887, 2.18 per cent.; and in 1888, 1.77 per cent.

Of the total railroad mileage of the world the United States now possess nearly one-half. At the end of 1888 the aggregate length of all lines in the country was 156,082 miles, all built in 60 years, the average mileage constructed per year being nearly 2600 miles. But this record of 60 years, wonderful as it is, fades into insignificance when compared with the achievements of the past 23 years—since the close of the civil war. The total mileage of our railroads at the close of 1865 was 35,085 miles. In the 23 years since then there have been constructed 121,000 miles of new road, an average of 5260 miles per annum, twice the annual average of the whole period of 60 years and 5.3 times the annual average of the first period of 35 years.

We have received from E. & F. N. Spon, 12 Cortlandt street, New York, a copy of "Spon's Tables and Memoranda for Engineers," by J. T. Hearst (tenth edition). This is a very neatly-printed vest-pocket volume, giving a great deal of useful information for engineers within very small compass. The price of the work is 50 cents with the case and 40 cents without.

One of the most progressive towns in the South is Florence, Ala. A year ago the population was 2000. It is now more than 8000. The aggregate capital employed in the various enterprises there is \$15,000,000. Many Northerners have made large investments there. The following are some of the industries projected or completed: A furnace about ready to go into blast and another partly constructed; a stove factory; a hardware company, with a capital of \$300,000, to manufacture fine builders' hardware, &c.; a wagon factory, with capital of \$150,000; an agricultural implement works; a handle factory; a wooden ware factory; a sash, door and blind factory; a cedar-bucket factory; a pump factory; planing-mills; a factory to make wooden plates; a flour mill; a cotton mill; a jeans factory; a gingham factory; a woolen mill; a cotton gin; a marble company; a roofing and paint company; a shoe factory; a canning factory, &c.

MacCoy's Pneumatic Tool.

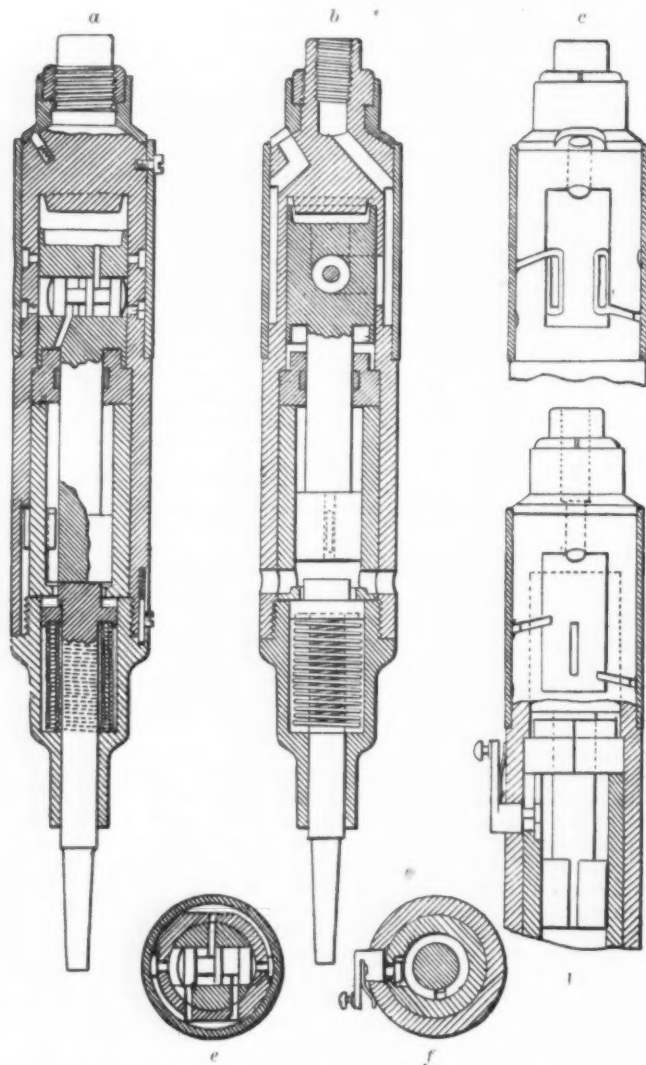
The principle underlying the construction of this tool is similar to that employed

consists of a cylinder within which is a reciprocating piston which acts as a hammer, delivering its blows on a detached tool-holder projecting through the lower

mer. The tool is operated by either compressed air or steam, under a pressure of about 40 pounds.

In the detailed drawings, Fig. 1, we show sectional views, from which an idea may be obtained of the construction and operation of the device. To one end of the cylinder is connected a flexible tube, through which the compressed air is applied. At the other end is the tool-holder, which is normally pressed upward or within the tool by a spring. Into this holder is inserted the bit, chisel or hammer, the selection of which is, of course, governed by the kind of work to be performed. Inside of the cylindrical case is a working cylinder, formed with grooves on its outer surface and passages leading from the tube to one slotted chamber on the outside of the working cylinder and terminating in inlet ports leading to the interior of the working cylinder. A second slotted chamber in the outer surface of the working cylinder extends from eduction ports through the cylinder, and ends in a passageway leading to the atmosphere through the upper end of the cylinder.

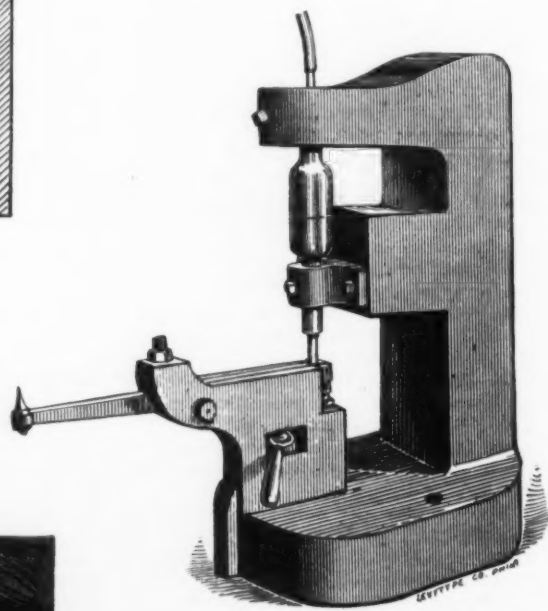
In the piston and arranged to work across it is a piston-valve operated by the pressure of air admitted through a port in the side of the cylinder. The valve is formed of a cylindrical plug having two annular grooves separated by a collar, and is fitted in a transverse seat in the piston; in its travel it covers and uncovers the admission and exhaust ports leading to the ends of the working cylinder. As



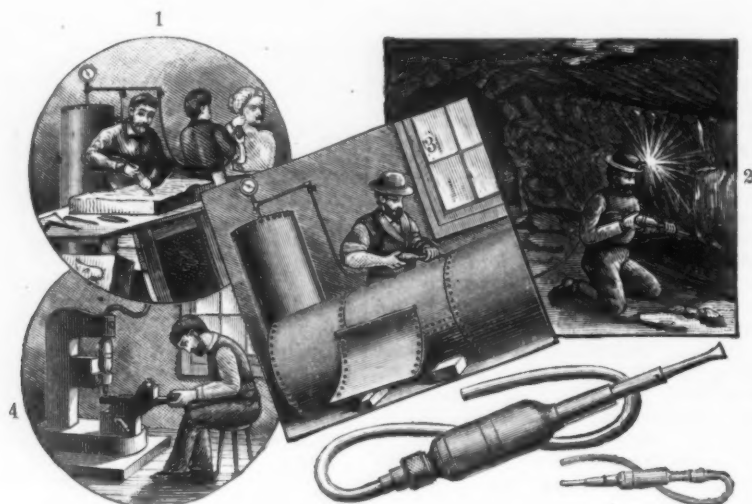
a. Front sectional elevation.
b. Side sectional elevation.
c. Showing eduction chamber.

d. Induction chamber and side-stop motion.
e. Valve-chamber plan.
f. Throttle plan.

Fig. 1.—Boiler-Tool Sections.



Repoussé Machine.



1. Cutting marble

2. Coal mining.

3. Calking boilers.

4. Silver work

MACCOY'S PNEUMATIC TOOL.

in the construction of rock-drills, dental pluggers, &c., but in the mechanical details it varies widely and most essentially, the result being that it performs its work in a way not before attained. The tool

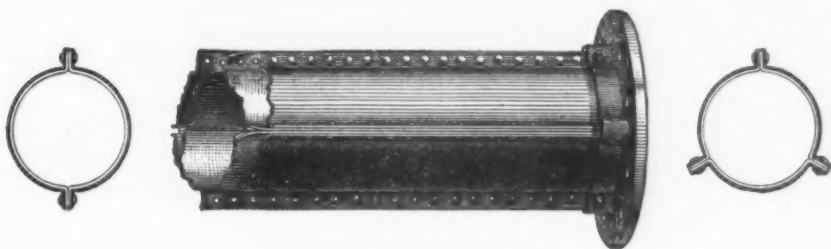
end of the cylinder. The most important characteristic of the tool is the unprecedentedly high rate of speed, estimated as high as 15,000 strokes per minute, secured, and the automatic operation of the ham-

above stated, the piston is not connected to the tool-holder, but strikes it as would a hammer. The upper or inner end of the tool-holder has an enlarged head, which fits loosely in the head of the working cylinder and receives the blows of the piston. As the latter rises and falls in the cylinder it closes the ports and thereby incloses a portion of the air, which forms an elastic cushion, which relieves the tool of the shock which would otherwise result at the end of each stroke. The hammer has a very short stroke, and as there is an appreciable difference in the diameters of the hammer and its metallic cylinder, an air-chamber is formed around the hammer, which reduces the friction to such a point that it is almost entirely absent, and as a consequence no power is here lost, the wear is exceedingly small and the remarkable rapidity above mentioned is made possible. The action of the tool is plainly described in the following paragraph, which we take from the letters patent covering the invention:

"No one has ever before planed marble or metal with a stroke machine, so far as I can learn. The successive strokes of the bit or tool are so very rapid that there is not time between them for the tool to rebound or quit contact with the material;

necessary. These chucks are made in two sizes by the Brightman Machine Company, of Cleveland Ohio, as follows: Diameter, 17 and 12 inches; opening of jaw, 9 and 6 inches; length of jaw, 14 and 10 inches; depth of jaw in both sizes, 2½

forming the pipe is clearly illustrated in the two sectional views. The combination of lead and steel thus secured meets all the requirements of service in the conveyance of fluids which do not attack lead, but which need to be handled under pressures which lead pipes will not carry. This principle of construction is applicable to every diameter and shape of pipe, and admits of the use of any weight of metal needed to give the strength required in engineering practice. The conduit is particularly adapted for use as a pump column for mines from which sulphurous water is discharged. With the conduit are provided lead-lined couplings and special fittings. This conduit is manufactured by the Spiral Weld Tube Company, of Temple Court, New York City, under the patents of J. C. Bayles.



STEEL-ARMORED ACID CONDUIT.

and, furthermore, when each stroke does work, and thereby imparts mechanical energy, the tendency or ability to rebound has departed from the tool with that energy, and the tool thus makes a practically continuous progressive movement and planes the material, a result not accomplished by any machine heretofore patented or constructed."

The engravings show a few of the uses to which this tool has been applied. In addition it has been successfully used to perform work as follows: Cutting marble, granite and other stone; calking boilers, swashing for *repoussé* chasing, dental plugging, engraving, planishing sheet-metal, dressing mill stones, matting, coal-mining, die-sinking, &c., &c. From the above it will be seen that the tool has appropriated a wide field, for which the work it performs renders it peculiarly applicable. This tool is made by the American Pneumatic Tool Company, of 431 Eleventh avenue, New York.

Planer - Chuck.

The engraving shows a planer-chuck formed with a round swivel base, so that it can be set at any desired angle. The round pin shown in position on the side of the upper piece is tapered, and fitting into a tapered hole, holds the chuck parallel with the base. By withdrawing the pin and turning the chuck one-quarter the pin again drops into position and is perfectly square with the base. One new feature is the movable cross-piece, with two setting-up screws and two pins shown in position

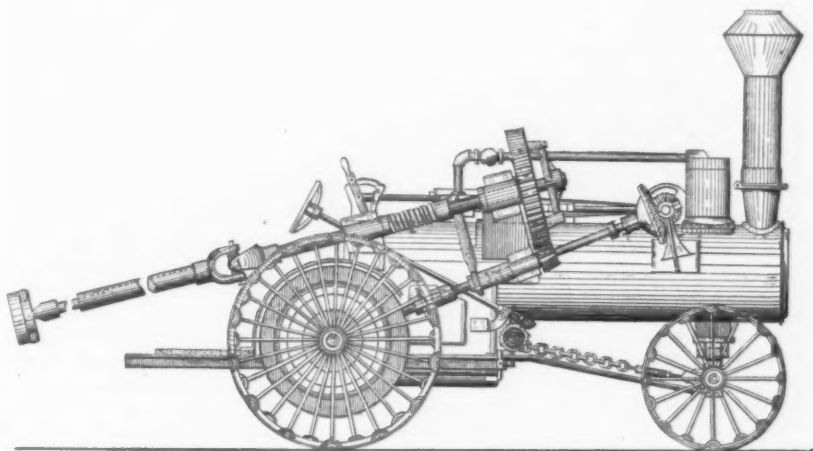
inches; weight, 200 and 125 pounds respectively.

Steel-Armored Acid Conduit.

The conduit we here illustrate is intended for use as a conveyer of iron-de-

Machine for Screwing Pipes Together.

This machine, which is the invention of Lewis A. Stanford, of Bradford, Pa., is mounted on a traction engine in order that it may be driven along from one section of pipe to another as they lie on the ground. The pipe-screwing appa-



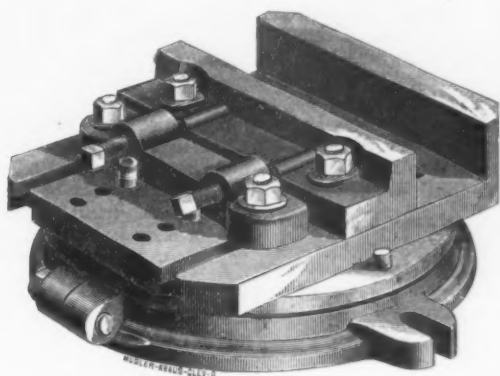
MACHINE FOR SCREWING PIPES TOGETHER.

stroying fluids such as acid mine waters, sulphuric acid, wood-pulp from digestors, &c. It is a light and strong steel pipe, built up of sections of such shape as to give it the maximum strength and stiff-

ratus consists of a shaft operated by the engine through the intermedium of gearing arranged as shown in the drawing. The shaft is provided with a universal joint in order that power can be applied to the pipe without having it in a direct line with the shaft. The shaft is also provided with a collar which can be adjusted so that the engine can be used at different distances from the pipe, and which is furnished with dogs which act automatically to engage or disengage with the pipe.

It is probable that less than 1,000,000 tons of anthracite coal was used in the production of pig-iron during the first six months of the year. This is remarkable when the importance of anthracite coal for blast-furnace purposes but a few years ago is remembered, but it is not a new matter, as the change has been a gradual one. In the meantime anthracite has increased largely as household fuel, though its general use is confined to a restricted area.

The Bay City (Mich.) *Tribune* says that F. W. Wheeler has secured the contracts for the building of three steel boats to run between Bay City and Cleveland. One will cost \$400,000, the other two somewhere in the neighborhood of \$320,000. The new Cleveland, Detroit and Saginaw Transportation Company are reputed to have let the contract.



PLANNER-CHUCK.

to prevent the same from slipping. It requires no blocking to follow up the work, will hold irregular work nicely and is very easily adjusted. For special work the makers can add to the length of the bed, so that the 9-inch will take in 12 inches if

ness, and provided with a lining of rolled chemical lead, so held in position between the externally projecting longitudinal flanges that it cannot collapse or become displaced. The method of securing the lead between the flanges of the segments

THE WEEK.

A syndicate of capitalists, including residents of Bismarck, Grand Forks and Jamestown, Dak., has been organized to develop a new canal scheme that will reclaim upward of 5,000,000 acres of arid and now useless land in North Dakota. The idea is to construct a canal from the Missouri River at Bismarck, 1668 feet above the level of the sea, to Lake Traverse and Big Stone Lake, 900 feet above the level of the sea.

To break down the Jute Trust, which is supposed to control the bagging used by planters in baling cotton, is the object of the Farmers' Alliance formed in the South. The alliance had been informed that either cotton or pine straw bagging would be satisfactory to dealers, and assuming this to be the case factories have been established in New Orleans and elsewhere for the manufacture of these substitutes on a considerable scale. But a new difficulty arises. A communication from the Liverpool Cotton Exchange, received through the Exchange in New York, states that the association will not receive cotton if it is not covered with jute. The farmers who have obtained advances on the cotton and the merchants who hold a mortgage are conferring to see what course shall be pursued, and the New York Exchange remonstrates in their behalf.

The steamship *Kansas City*, launched on Saturday last at Roach's ship-yard, Chester, Pa., for the trade between Savannah and Boston, is 350 feet in length, with triple-expansion engines, and she is expected to attain a greater speed than any vessel in the Atlantic coast service.

Our commerce with South America was the subject of discussion at a meeting of the New York Board of Trade and Transportation, at which W. T. Martin, chairman of the Committee on the International American Congress, presented a report containing many interesting figures. The Argentine Republic imports yearly over \$100,000,000. Of this vast sum the United States sells only 7½ per cent.; Belgium sells 7½ per cent.; Germany, 9 per cent.; France, 17 per cent.; England, 33 per cent. The Empire of Brazil imports over \$105,000,000 worth of goods annually. Of this sum the United States sells only 8 per cent.; France, 17 per cent.; England, 45 per cent. It is estimated that the imports of South and Central America are over \$450,000,000 yearly. Of this great sum the United States sells only about 11 per cent., or \$15,000,000, while England, France and Germany sell nearly \$400,000,000 yearly. It was contended that at least one-half of these imports should be derived from the United States, which consumes so large a proportion of the coffee, hides, sugar and other raw materials which these countries produce. The first requisite in seeking to establish trade with South and Central America is to possess rapid and direct means of transit, and measures designed to secure this object will be considered at the congress in Washington next October.

In a report to the State Department concerning the trade of Japan for 1888, Minister Hubbard furnishes some interesting and suggestive figures. During that year Japan exported goods to the value of about \$48,000,000, of which the United States received \$16,000,000, principally in teas and silks, while Great Britain took only \$6,000,000. But when we come to look at Japan's imports there is a vast difference in the showing. Great Britain sold in Japan goods valued at \$22,000,000, while the United States sold less than \$4,500,000, more than half of which was for kerosene. Mr. Hubbard says that while there are a few articles in which we shall probably

continue to lead, we cannot hope to win a fair share in Japan's trade until our manufacturers shall have studied its requirements and shall have begun to compete for it intelligently and zealously.

Manufacturers in Buffalo desire an opportunity of making their views on the subject of trade relations with Canada known to the Investigating Committee of the United States Senate. Their opinions are entitled to some weight.

Capt. Elisha Norcom, an experienced Lake Superior iron-ore miner, returned from Cuba, where he has been in the interests of an American company that are just opening extensive iron mines in the Cuban mountains. The company include some of the men who made the Vermillion (Minn.) district famous. The territory visited by Captain Norcom is about 20 miles west of Santiago, near the coast, and in the Daiquiria Mountains. He says: "This is the ore region, and I believe the field is practically limitless. The territory purchased by my company will, when opened, be the second mine in operation in the country. The other is worked by the Pennsylvania Steel Company and Bethlehem Iron Company. It was a question with us how to get the ore to the sea-board. It could only be by a railway to Santiago, 20 miles, or by one directly to the coast, 3½ miles. The latter meant the construction of a harbor and breakwater, but we decided on it, because, although it would cost more, it would be more economically maintained. The construction of the harbor has been begun. The beginning of the work about six weeks ago was looked upon as quite an event, Governor-General Salamanca himself being present and dumping the first load of rock for the breakwater. An English company are now trying to get a grant. We will work between 1000 and 1500 men and send all the ore to this country. The ore is 64 to 68 per cent. metallic iron."

St. Louis is to have six miles of elevated railroad which will cost \$650,000 per mile to construct, and the cost of the entire line, comprising 17 miles, will be \$6,000,000.

Having reference to the desirability of maintaining satisfactory commercial relations with Mexico, hope is expressed in several quarters that Secretary Windom will not see fit to enforce the recent order imposing a surcharge of 10 per cent. ad valorem and \$1 a ton on Mexican cargoes and shipping in retaliation for the existence of the Mexican differential duties. As the mercantile marine of Mexico participating in the trade with the United States is of very insignificant proportions, the entire shipping business of the two countries is liable to be thrown into the hands of Spanish and English steamship lines, who are eagerly alive to an opportunity such as might arise should the Mexican Government see fit to discriminate in like manner against the American shipping now taking the bulk of the trade.

There are gigantic salt mountains on the Virgin River, a branch of the Colorado. Capt. J. A. Mellon, who has been on the Colorado 25 years, tells the editor of the *San Francisco Examiner* that "the salt mountains cover a stretch of about 25 miles on both sides of the Virgin seven miles up from Colorado. A single blast of giant powder will blow out tons of it."

A water-ways convention in session at West Superior last week was attended by delegates from all the lake States and the chief cities along the Mississippi. It was alleged that the Government had discriminated in favor of railroad and against water carriers. For the Northern Pacific Railroad system terminating at Duluth the Government gave 47,000,000 acres of land, worth \$100,000,000. This is twenty-five

times as much land as has been appropriated to open the outlets of Lake Superior. The delegates to the convention consequently claim appropriations of Congress on behalf of cheaper transportation for the people.

The shipments of iron ore from the Lake Superior mines for the last week in July reached the enormous total of 270,081 gross tons, this being the largest single week's work on record. The total shipments for the three months since navigation opened aggregate 3,391,327 gross tons. This is 1,524,963 tons above the quantity that had been sent to market by water on the corresponding date last year.

Eben S. Allen, a horse-railroad president in this city, who is in trouble on account of financial speculations to the extent of \$130,000, poses in the courts as one lately engaged "in the iron business." Hofele and Allen, as alleged, formed a copartnership in the iron manufacturing business at No. 140 East Forty-first street, where they made iron railings and other articles. They were in business about three years, during which time Allen drew out of the concern \$40,000, Hofele's share being a little over \$1000.

The success of machines introduced into Venezuela for decorticating ramie fiber excites much enthusiasm in Caracas. Cultivation is to be carried out on a grand scale, and every facility has been afforded by the Government, including free grants of land in various States, the remission of all duties on importations by the company and liberal provision for colonies of emigrants, which the company interested have agreed to introduce. The general superintendent is Señor Juan Anselmo. Their capital is \$130,000, with the right to increase the same to \$1,000,000.

Capitalists of Kansas City are said to have formed a syndicate in connection with New York parties to operate lead and zinc mines in Joplin and Webb City on a large scale.

The Treasury Department has decided that dutiable merchandise when once withdrawn from the custody of the Government cannot be exported with benefit of drawback, nor when exported can it be returned without payment of duty on each reimportation.

Dakota's great need is irrigation, but relief can be had by sinking artesian wells. At a session of the United States Senate Irrigation Committee, held in Huron, D. T., 3d inst., Prof. Lewis Macclouth, president of the South Dakota Agricultural College, stated that there are hundreds of artesian wells in the valley of the James River, each yielding a large flow of water under heavy pressure from an average depth of 1000 feet. The power thus obtained was now utilized to run steam-presses, electric-light dynamos, mills and factories. An inexhaustible supply of water-power could therefore, he said, be had in this valley by an increase in the number of artesian wells. Some of the wells already flowing gave out the enormous quantity of 4000 gallons a minute.

Postmaster-General Wanamaker desires to have mail-boxes on the out-going ocean steamers where mail can be put in until the gang-plank is removed. A new postcard much larger than the present one will soon be out.

Representatives of the Chicago Board of Trade and of the Lumbermen's, Produce and Merchants' exchanges, of that city, who have been in Florida and other Southern States exploring for commercial purposes, have returned to Chicago. The main object of the delegation's trip South was to consider the feasibility of a scheme of deepening the Tampa, Fla., harbor and making it the terminal point

for South and Central America and West India vessels. It was learned that the harbor will now admit vessels drawing 26 feet of water to anchor with safety near the port, and with dredging and improvements which are now in contemplation the draft of vessels may be increased to 35 feet. The superior facilities of Tampa Harbor for a receiving point were a surprise to every one of the delegation.

North Dakota claims to be the first State in the Union to provide for a State system of manual training and industrial education. Of the school lands 40,000 acres are to be set aside for such a school at Ellendale. In the convention now in session to frame a State constitution the suggestion was well received, while the actual embodiment in the constitution of this grant is giving great satisfaction.

A Pittsburgh dispatch says that the Iron River, Youngstown and Florence ore mines, on the Menominee Range, in the Lake Superior district, owned by capitalists and iron manufacturers, were sold for \$1,000,000 to Frederick Schlesinger, of Milwaukee, representing a syndicate of New York capitalists already interested in that region. This syndicate will be able to control the market for non-Bessemer Lake Superior ore.

The Columbia and Susquehanna rolling-mills, at Columbia, Pa., on the 12th inst. posted a notice announcing that after August 19 they would pay puddlers \$3.90 per ton instead of \$3.85 as announced a few days ago.

It is reported that the Japanese Government, desiring to encourage importations from the United States, instructed their consul in New York to invite estimates of the cost of dredging-machines for the improvement of Yokohama harbor. Hitherto machinery of this kind was obtained from Europe. The Consul, Mr. Fujie, is said to have been surprised that no response to his overtures was received. In consequence a heavy government contract intended for the United States goes to Europe.

A marvel of modern engineering is mentioned in a special from Lancaster, Pa., of the 11th inst., on which day W. K. Beard, master carpenter of the Pennsylvania Railroad, moved the iron bridge over Mill Creek in 12 minutes. In 58 minutes from the beginning of the work a freight train and two engines passed over the bridge, which is 258 feet long and weighs 2500 tons. It was moved 45 feet by 100 men and 78 trestles and rollers, jacks and cranes. The superstructure was first jacked up 8½ inches and was resting at both ends on iron rollers placed on iron plates about 18 inches apart. The plan was to move the bridge by means of crabs to other rollers, which rollers ran easily upon two parallel railroad ties placed about a foot apart. The windlass plan in mechanics was used, and four crabs were required for the work. The crabs were placed out from the bridge and below it, and each crab was manned by four men. The stoutest kind of ropes was used, forming an endless chain, and as the crabs were wound up the bridge moved.

A charter has been granted to the Reading Iron Company, who are to be the successors to the Reading Iron Works. The capital is \$300,000 in 300 shares of \$100 each, of which Austin Corbin owns 280 shares. The other 20 shares are divided between A. A. McLeod, of Philadelphia; George F. Baer, Simon Seyfert and George E. Clymer, of Reading.

Minister Reid has informed the State Department that the general conference on weights and measures will meet at Sèvres, near Paris, September 24. M. Descloiseaux, president of the French Academy of Sciences, will preside.

MANUFACTURING.

Iron and Steel.

Charles Bingen, proprietor of the Cyclops Steel Works, at Titusville, Pa., has just added to the works a four-hole six-pot Siemens steel-melting furnace, and also a new melting-house. Additions have also been made to the hammer department, and others are contemplated in the near future. These extensions have all been made to meet the present trade, the rapidly increasing demand for their product having outgrown the facilities of the works.

In our issue of last week we made mention of the fact that Wm. Hainsworth, formerly superintendent of the Pittsburgh Steel Casting Company, at Pittsburgh, had removed to Seattle, Wash. Ter., and had formed a company to engage in the manufacture of iron and steel. From a recent issue of the *Railroad Gazette* we take the following additional particulars regarding the new concern: "The Seattle Iron and Steel Mfg. Company, of Seattle, Wash. Ter., have been organized and will soon file articles of incorporation. The capital stock will be placed at \$100,000 and may be increased to \$500,000. The works will be built at Salmon Bay, near Seattle, where the company have purchased 20 acres of land adjoining the Seattle, Lake Shore and Eastern Railroad tracks. The company are to manufacture iron and steel. The raw material at first will be obtained from the Irondale Furnace, but as soon as the Kirkland Company, of which Peter Kirk, of Workington, England, is the head, commence operations the raw iron for the company will come from the Kirkland furnaces. The architects are already at work on the buildings for the company. The incorporators are: William Hainsworth, William H. Hainsworth, Leigh S. J. Hunt, W. C. Hill, Thomas Ewing, William E. Bailey, John W. Emerson, Bailey Gatzert, Lyman Elmore, T. A. Noble and Robert H. Boyle. Of these most are well-known in Seattle. The trustees have chosen officers as follows: President and general manager, William Hainsworth; vice-president, Thomas Ewing; superintendent, T. A. Noble; secretary and assistant manager, William H. Hainsworth."

At a recent meeting of the directors of the Norton Iron Works, of Ashland, Ky., the resignation of John Russell as president was accepted, and Charles W. Greene, of Tiffin, Ohio, was elected to fill his place. John Means resigned his office as treasurer of the firm and John Russell was elected to fill his place. No other changes were made in the organization.

The strike of the employees at the furnaces of the Carrie Furnace Company, at Rankin Station, Pa., mention of which was made in our issue of last week, is apparently as far from settlement as ever. Both stacks are banked at present, but will have to be blown out if a speedy settlement does not take place. The advance demanded by the men will average about 20 per cent., and the firm claim that the present prices of pig-iron will not permit them to grant it. The furnace property is now being guarded by deputy-sheriffs, and while several conflicts have occurred between them and the workmen, no material damage has been done. It is probable that a conference between the firm and the leaders of the workmen will be held during the present week, and a settlement of the trouble may be the result.

Furnace F, of Carnegie Bros. & Co., Limited, at Braddock, Pa., has been blown out for repairs. The furnace was put in blast in October 18, 1886, and since

that time it has been stopped twice on account of strikes, and has produced 224,795 gross tons of pig-iron. This is believed to be the largest amount of pig-iron ever turned out by a furnace in a single blast and the largest production ever made in the same length of time. The report that the above firm are about to commence the erection of two more stacks at Braddock is without foundation.

The Beaver Falls Mills, of Carnegie, Phipps & Co., Limited, at Beaver Falls, Pa., and the Amalgamated Association have come to an agreement and the scale of that organization was signed on the 10th inst. It goes into effect on the 15th inst., and will continue in force for one year.

The Moorehead-McCleave Company, proprietors of the Soho Iron and Steel Works, at Pittsburgh, are engaged in altering their old armor-plate mill and expect to have it in readiness for work by November 1 next. With the improvements completed the firm will be able to roll plates about 90 inches wide, as light as ¼ to ½ inch, and of any length, in either iron or steel. No other improvements are contemplated at present. Soho Furnace of this firm produced 5800 tons of pig-iron during the month of July last.

The two stacks of the Isabella Furnace Company, at Etna, Pa., produced 12,800 tons of 2268 pounds of pig-iron last month.

The Bellaire Nail Works, of Bellaire, Ohio, are at present engaged in the erection of a billet-mill that will enable them to furnish steel to the trade from 1½ inches square to 4 inches square. This improvement will be completed within the next 60 days. As situated at present the firm are unable to furnish steel of a less size than 4 inches square. The blast-furnace of this company, which was banked during the coke strike, has again resumed operations.

Concerning the report that the nailers in the employ of the Laughlin Nail Company, of Wheeling, W. Va., had gone out on a strike, we received the following advices from the firm under date of the 7th inst.: "We have no strike at our mill, though it looked for a short time on Monday as if our workmen might oppose us in our effort to cut light nails. This obstacle, however, has been removed and we are again in operation."

The Illinois Steel Company, of Chicago, have leased the Mayville Furnace, at Mayville, Wis., from the Northwestern Iron Company. The furnace is out of blast, but it is the intention of the lessees to blow it in as soon as possible. Its capacity is about 1500 tons a month, and it may be utilized for either foundry or Bessemer iron. This consequently will again throw the product into the hands of Pickands, Brown & Co., Chicago, who were selling the iron from this furnace before they became the exclusive sales agents for the Illinois Steel Company's pig-iron.

The Columbia Iron Company, of Lancaster, Pa., on the 8th inst. posted notice of an increase from \$3.50 to \$3.90 per ton for puddling, and other wages in proportion, keeping the promise made four months ago, when the reduction was made, that when trade grew better they would increase wages.

The National Tube Works Company, of McKeesport, Pa., have been awarded a contract for 80 miles of 12 and 16 inch pipe, to be used by the Northwestern Ohio Gas Company on their projected line from their Ohio field to Detroit. The contract amounts to \$800,000.

The Eagle Rolling Mill and Tube Works, at Pittsburgh, which have been idle for about a year, have been put in operation by J. W. Friend. When closed the plant was turning out muck-iron ex-

clusively, and the manufacture of this article has been resumed. About 200 men were given employment.

J. H. Sheadle, secretary of the Mahoning Valley Iron Manufacturers' Association, of Youngstown, Ohio, has issued a statistical abstract showing the tonnage from July 1, 1888, to July 1, 1889, of the mills and furnaces embraced in the association. The total tonnage was 2,443,857 tons, of which the mills furnished 755,242 tons and the furnaces 1,678,615 tons. The volume of tonnage shows an increase of 16 per cent. over the preceding year.

The War Department has awarded the contract for furnishing castings and forgings for a 10-inch rifle to the Standard Steel Casting Company, of Thurlow, Pa., at 27 cents per pound. The contract for furnishing the army with forgings for three hoops and parts of breech mechanism for a 10-inch steel-wire gun has been awarded to the Bethlehem Iron Company, at Bethlehem, Pa., at 40 cents per pound for certain of these forgings, and \$1 per pound for the breech-mechanism forgings.

J. P. Witherow & Co., of Pittsburgh, have just completed and started in successful operation a Bessemer steel plant for the Chester Rolling Mills, at Thurlow, near Chester, Pa.

The Boulton ingot-casting apparatus illustrated in our issue of May 16, 1889, was erected at the works of Singer, Nimick & Co., Limited, at Pittsburgh, on an arrangement with the Solid Ingot Company, of Newark, N. J., for a 30-day test. The test was completed last week without a single failure from first to last, and the apparatus has been accepted.

In a recent letter to the *Iron and Steel Bulletin* W. F. Durfee, of Birdsboro, Pa., agent for John Giers, furnishes the following figures, showing the quantity of steel passing through the Giers "soaking-pit" process during the years 1887 and 1888:

Countries.	1887. Gross tons.	1888. Gross tons.
Great Britain.....	237,546	257,335
Germany.....	153,454	227,020
Austria.....	90,000	95,000
Belgium.....	68,162	67,377
France.....	8,223	22,558
Sweden.....	4,348	4,578
United States.....	.....	38,660
Totals.....	561,733	712,528

He adds: "The above figures show an increase in the production of steel by the 'soaking-pit' process for the year 1888 as compared with 1887 of 26.8 per cent., and afford indubitable evidence of the high appreciation of the process wherever it has been introduced."

A recent issue of the *Ironton (Ohio) Register* says plans have been perfected for establishing a steel plant at that place.

The Penn Iron Works, of Lancaster, Pa., posted notices on the 10th inst. of the resumption of operations on August 19 at \$3.85 per ton for puddlers. Five months ago 250 men went on strike, when the wages were reduced to \$3.50 per ton, and since that time the mill has been idle.

A charter has been granted to the Raney & Berger Iron Company, of New Castle, Pa., with a capital of \$200,000. The directors are Leander Raney, George B. Berger, W. T. Dougherty and George W. Hartman, of New Castle; James A. Raney, of Mahonington and Alexander A. Patterson, of Pittsburgh.

The Thomas Iron Company, of Hoken-dauqua, Pa., have effected a radical change in the management of their furnaces which has produced a decided alteration in the character of their product. They have increased the output of soft or foundry iron grades over 50 per

cent. as compared with their former record.

Machinery.

Ludlow - Saylor Wire Company, St. Louis, Mo., report an unusual amount of business on hand for this period of the year. A glance over their order-book reveals some good-sized contracts, prominent among which are noticed specifications for bank railings, cemetery inclosures and other work of this class.

Collins - Gibbons Mfg. Company, St. Louis, Mo., have just shipped to Kansas City Hay Press Company a large size wire straightener and cutter, capable of cutting wire in 10-foot lengths.

Miscellaneous.

The American Tube and Iron Company, Youngstown, have secured a contract for 70 miles of wrought-iron pipe from the Columbus (Ohio) Natural Gas Company, after a fierce competition with manufacturers of cast-iron pipe in Louisville and Newport, Ky. The contract amounts to \$500,000.

A new corporation known as the Pennsylvania and Lake Erie Dock Company, composed of owners of blast-furnaces, has been formed at Pittsburgh for the purpose of constructing and maintaining extensive wharves at Fairport, on Lake Erie. The incorporators are H. C. Frick and H. M. Curry, of Carnegie Bros. & Co., Limited; Horace Crosby, of the Republic Iron Works, Limited; John W. Chalfant, of Spang, Chalfant & Co.; Henry C. Fownes, of the Carrie Furnace Company; John F. Speer, of Shoenberger, Speer & Co., and C. D. Frazer. A charter will be applied for the latter part of this month, and when it is granted work will be commenced on the docks. These will be 2350 feet in length, and will be used for the handling of ore from the lakes.

According to the *Connellsville Courier*, the production of coke in that region for the first seven months of the year has been as follows:

Months.	Net tons.
January.....	524,447
February.....	417,280
March.....	443,090
April.....	418,534
May.....	454,250
June.....	421,178
July.....	497,115
Total.....	3,175,894

A decided advance in prices is promised as a result of the strike, but at the present writing the old prices still rule, as follows: Furnace coke, \$1; to dealers, \$1.10; foundry coke, \$1.25; crushed coke, \$1.50, all on board cars at ovens, per ton of 2000 pounds. Foundry prices at Western points are quoted as follows: Chicago, \$4; St. Louis, \$3.55; Louisville, \$4.75; Kansas City, \$6.75 to \$7.15; Toledo, \$3.55; Detroit, \$3.85; Milwaukee, \$4.05; Buffalo, \$3.50 to \$3.75. Reynoldsville coke is quoted at \$3 to \$3.25 at Buffalo. New River, Pocahontas and Walston coke are quoted at \$4 in Chicago, and New River coke brings \$4.50 at Louisville. Crushed coke sells for \$4.10 at Toledo and \$4.50 at Chicago.

Bids were opened for cast-iron gas-pipe at Hamilton, Ohio, on the 7th inst., by the gas-works trustees, and the following manufacturers were found to be competitors: The Jackson & Woodin Mfg. Company, of Berwick, Pa.; Dennis Long & Co., of Louisville, Ky.; the Ohio Pipe Company, of Columbus, Ohio, and the Addyston Steel and Pipe Company, of Cincinnati. The contract was awarded to the Addyston Steel and Pipe Company at the following rates: 12-inch pipe, \$25.75 per ton of 2000 pounds; 8-inch, \$26.75; 6-inch, \$26.75; 4-inch, \$28.75; special castings, 2½ cents per pound.

The Worcester Steam Heating Company, 116 Gold street, Worcester, Mass., are distributing circulars to the trade relating to the Pentecost Steam Generator which they manufacture. The pamphlet opens with a broken view of the heater accompanied by descriptive particulars. The brick-set form of heater is also presented, and attention is directed to steam tubular boilers. At the close a list is given of those who have used the Pentecost heater with satisfactory results.

The Gorton Lidgerwood Company, manufacturers of the Gorton House-Heating Boilers, 96 Liberty street, New York, have issued a handsome publication describing the characteristics of this well-known heating apparatus. The most striking feature to the eye in this publication is the cover, finished in imitation of an iron casting. The pamphlet opens with a treatise on modern house-heating and compares the merits of hot air, hot water and steam. It also deals with the several ways of applying the heat known as direct and indirect radiation. The pamphlet next takes up the Gorton Side-Feed Boiler, which is illustrated by a broken view and a full description is given. Views of the grate and general exterior views are also presented, and tables of sizes with price-lists accompany the illustration. The boiler fittings are noticed on the succeeding pages, while some ten pages are devoted to illustrations of several well-known radiators. At the close of the pamphlet are testimonial letters and reference lists.

The Lunkenheimer Brass Mfg. Company, Cincinnati, Ohio, have recently completed a new brick warehouse, giving them additional room for factory purposes, and are at present engaged in installing something over \$4000 worth of new machinery specially adapted to their requirements, which when completed will give the company an increase of 25 per cent. in their manufacturing capacity.

A Curious Chemical.

A new substance, singularly alike in its chemical nature and in its properties, says *Nature*, has been discovered by M. Pechar. It is a mixed acid derived from oxalic and molybdic acids, and is, therefore, termed "oxalomolybdic acid." The crystals of oxalomolybdic acid, when dry, may be preserved unchanged either in sunshine or in the dark; but if moist they quickly become colored blue when exposed to the sun's rays. If characters be written on paper with the solution they remain invisible in a weak light; but when exposed to sunshine they rapidly become visible, turning to a deep indigo color. It is curious that this effect only happens when the solution is spread over paper or other surfaces; for the solution itself may be kept unaltered in the bottle for any length of time, except for a trace of blue at the edge of the meniscus, where, by surface action, a little is spread against the interior glass walls. If a sheet of paper be immersed in saturated solution of the acid, dried in the dark and then exposed behind an ordinary photographic negative a very sharp print in blue may be obtained by exposure to sunlight for about ten minutes. The color instantly disappears in contact with water, so that if a piece of this sensitized paper be wholly exposed to sunlight one may write in white upon the blue ground by using a pen dipped in water. If, however, the paper with its blue markings be exposed to a gentle heat for a few minutes the blue changes to black and the characters are then no longer destroyed by water.

The Iron Age

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JOHN S. KING, - - - BUSINESS MANAGER.

Chemical Analysis of Foundry Mixtures.

Enterprising chemists are calling the attention of foundrymen to a frequent cause of trouble in their mixtures of iron. It is asserted with much force that scientific methods have now become so general in the iron business that there are very few brands of pig-iron sold whose chemical characteristics have not been pretty well established by analysis. A foundryman purchases one brand for its silicon, another for its carbon, and others for their possession of a number of constituents in favorable proportions to secure desired results. New brands of pig-iron put upon the market almost invariably go through chemists' hands in order that the sellers may know just what character of metal they are offering. Yet with all this exactness in the matter of pig-iron and the careful apportionment of a mixture to secure just the proper quantity of each brand, the average foundryman then proceeds to add whatever he thinks the iron will stand of a most uncertain commodity denominated scrap. He knows the positive elements of strength or weakness in the pig-iron which he is using, or at least he should know them with so much information available, but the scrap he introduces wholly by guess-work. The chemists point out this peculiarity of foundry practice, and insist that it presents a fault which calls for a remedy. Of course the remedy is to employ a chemist to investigate and report upon the character of the scrap secured.

We are not informed as to the methods which the chemists propose to follow in making their analyses of the scrap intended to be used by foundrymen. Practical iron-workers are inclined to be incredulous that any effective method can be devised for ascertaining the chemical contents of a pile of mixed scrap gathered from a variety of sources, and yet this very statement is in itself an argument in favor of some plan by which material of this character can be used intelligently. They admit, however, that when large pieces of old iron are to be remelted it would be a comparatively simple matter to make a satisfactory analysis of them. They further allege that in this period of low prices, with the necessity constantly confronting them of reducing costs rather than adding to them, it would be impracticable to melt miscellaneous scrap in a separate cupola for the purpose of analyzing the mixture before determining what proportion of it to use in connection with pig-iron. This, however, may not be a bar in cases in which a special quality of castings is desired and for which a special price is to be paid by the consumer. It would be of great interest to the foundry trade to hear from chemists on this question and learn what methods they have to

suggest in order to determine the exact value of scrap for mixing with pig-iron.

While we would like to have more light upon the subject of analyzing scrap before passing upon its practicability, it is probably true that in many cases foundrymen find fault with pig-iron for making bad castings, when it is the scrap used as part of the mixture that is to blame. We have quite recently been shown the analysis of a brand of pig-iron which was purchased by one of the largest consumers of foundry irons in the country and which was pronounced of very unsatisfactory quality by him after trial. The analysis showed the iron to be of more than usual excellence for general foundry purposes. Yet there was no doubt that the foundryman in question had experienced trouble with the castings. The furnacemen who sold him the iron could account for the untoward circumstance in no other way than that the scrap-iron used in the mixture was of bad quality. Plenty of such cases could possibly be cited by furnacemen against whose iron a prejudice has thus been created in certain quarters which they have not been able to overcome.

Iron Imports for the Half-Year.

We have compiled the following table from the reports of the United States Bureau of Statistics, showing the quantity of iron and steel imported into this country in the first six months of the present calendar year as compared with the corresponding period of last year:

Commodities.	Gross tons.	
	Half-year, 1889.	Half-year, 1888.
Tin-plates.....	175,615	145,569
Pig-iron.....	83,279	97,280
Steel blooms, &c.....	48,609	56,094
Wire rods.....	40,110	61,472
Scrap-iron, &c.....	18,818	20,300
Bar-iron.....	11,847	12,460
Steel plates, &c.....	8,717	11,278
Steel rails.....	6,118	44,877
Cotton-ties.....	4,069	2,415
Sheet and plate iron.....	3,623	2,910
Wire and wire rope.....	1,853	1,530
Forgings, &c.....	789	745
Scrap-steel.....	730	5,685
Chains.....	294	411
Hoop-iron.....	6	344 lb.
Iron rails.....	.....	1
Totals.....	404,507	472,098
Iron ore.....	391,905	326,169

We have arranged the items in the above table in the order of their prominence this year. Although a marked increase took place in the imports of tin-plates, it will be observed that in nearly every other article there was a decrease, which in some instances was very heavy, notably so with respect to pig-iron, steel rails and wire rods. The imports of steel blooms, scrap-iron and scrap-steel fell off, but in sheet and plate iron and cotton-ties quite an increased movement has occurred. The importation of iron ore is increasing, a decided jump having been made in June, the last month of the half-year. It is of interest to note the June imports in detail, as compared with the two preceding months and with June of last year, which will together constitute sufficient data to show the tendency of the import trade in iron and steel. The

figures are as follows, the items being arranged in the same order as in the table presented above:

Commodities.	Gross tons.			
	April.	May.	June.	June, 1888.
Tin-plates.....	31,272	35,555	26,846	27,400
Pig-iron.....	13,572	11,320	8,977	14,626
Steel blooms, &c.....	6,823	5,955	4,413	10,689
Wire rods.....	6,222	4,607	4,801	11,782
Scrap-iron, &c.....	3,168	3,684	1,310	1,462
Bar-iron.....	1,825	1,647	1,483	3,672
Steel plates, &c.....	1,309	1,665	362	1,205
Steel rails.....	.....	.....	38	5,452
Cotton-ties.....	.....	2,011	1,007	2,032
Sheet and plate iron.....	575	598	854	430
Wire and wire-rope.....	325	296	370	235
Forgings, &c.....	156	94	111	71
Scrap-steel.....	30	401	.....	1,008
Chains.....	25	33	41	63
Hoop-iron.....	.....	.....	.....	106 lb.
Iron rails.....	.....	.....	.....	1
Totals.....	65,302	67,866	51,213	80,128
Iron ore.....	31,491	62,445	97,424	37,694

A little more than half of the total quantity of the iron and steel imports in June consisted of tin-plates alone. The miscellaneous iron and steel imports amounted to less than 25,000 tons, showing a marked decrease as compared with the preceding months and with June of last year. We are fast reaching low-water mark in importations of this character.

The publication of these import statistics, taken in connection with the statistics of pig-iron production for the first half of this year, enables us to form an approximation to the consumption of pig-iron which is now in progress. Stocks of unsold pig-iron in the hands of makers at the beginning and end of the half-year also form an element in the computation, which is as follows:

Sources of supply.	Gross tons.	
	First half 1889.	First half 1888.
Production.....	3,667,767	3,020,092
Imports.....	83,279	97,280
Stocks January 1.....	300,144	301,913
Total supply.....	4,051,190	3,419,265
Stocks June 30.....	502,934	358,273
Consumed.....	3,548,256	3,060,992

The quantity of pig-iron exported and the stocks of foreign pig in bonded warehouses are so small that it is unnecessary to complicate this statement by taking them into consideration. This table shows that the consumption of pig-iron in this country during the first half of the present year was certainly 500,000 tons in excess of that of the first half of last year. The falling off in importations of miscellaneous iron and steel products has also thus far been insufficient to change these figures very materially if they were included in the statement of consumption. For our purposes, however, they are excluded, and pig-iron alone is considered. From present appearances, the consumption of pig-iron in the last half of this year will considerably exceed that of the first half, probably amounting to 4,000,000 tons. The consumption of the year would thus be in round numbers 7,500,000 gross tons, as compared with 6,688,744 tons in 1888, in which year the consumption of pig-iron was larger than in any previous twelvemonth. The consumption for the first half of the present year exceeds the consumption in the whole of the year 1879, showing the remarkable expansion which has taken place in the iron trade of this country in ten years.

The Demand for Heavy Rails.

The demand for steel rails has latterly been of such proportions that the inquiry is often raised as to where the heavy tonnage is going, inasmuch as railroad-building is not being very actively prosecuted this year. A very considerable part of the tonnage is undoubtedly to be accounted for by the increased weight of the rails purchased this year as compared with former years. It is almost an invariable rule now with all railroads making renewals to order heavier rails than they had previously been using in their tracks. Increasing traffic, greater speed of trains, increased weight of locomotives, greater capacity of freight-cars, all demand a better road-bed and a heavier rail. Roads laid with 56-pound rails are taking 60 and 65 pound rails. Those previously using 65 and 67 pound rails are now taking 70 and 80 and even 90 pound rails. We are informed that one of the rail-mills, running exclusively on standard rails, has not taken an order this year for rails weighing less than 60 pounds. Not long since the standard weight of rails was 56 pounds to the yard, requiring 88 tons per mile of single track. As a 65-pound rail takes a trifle over 100 tons per mile of single track, although but 9 pounds per yard heavier than a 56-pound rail, it is easy to see how the tonnage is being swollen from this cause alone. The increased weight of section is estimated by rail-makers at 15 to 20 per cent. above the average of last year's sales of rails. The greatly increased output of individual rail-mills, as compared with former years, is also accounted for in considerable part by the tendency of the railroads to order heavier rails. Modern mills handle a 70-pound rail as easily as a 56-pound rail, making a decided difference in tonnage of output in a 24-hour run, or in any other period which may be selected for comparison.

Effect of Foreign Patents on United States Patents.

The decision of Judge Wallace in the United States Circuit Court for the Southern District of New York, just handed down in the Anchor Brewing Company case, is of vast importance to all holders of foreign patents who also have later United States patents for the same inventions. Judge Wallace in this case says that, contrary to his original impressions, he understands the opinion of the United States Supreme Court in the Bate Refrigerating Company case to be that "the exclusive right to the invention here is to cease with the exclusive right of the patentee in any foreign country," and he therefore holds that a United States patent granted in March, 1889, for an invention previously patented in Germany on September 6, 1877, and in France on September 3, 1877, lapsed with those foreign patents when they became forfeited (before the expiry of their full terms) by the failure of the patentee to pay the annuities and work the invention as required by the laws of Germany and France. Judge Thayer, in an opinion rendered some few weeks since in the Eastern District of Missouri, had previously reached a like conclusion. It therefore may be taken as

tolerably well settled (until and unless the Supreme Court reverses the ruling) that the holder of a United States patent for an invention *previously* patented abroad must continue to pay the foreign taxes on the foreign patents to keep the United States patent in force.

Our Trade with Venezuela.

During the past 15 years Venezuela has been ruled by able men who have succeeded in closing the era of continual revolutions which extended over a quarter of a century, and it has become one of the most prosperous and promising republics of South America. It covers an area of 1,539,398 sq. km., or about 600,000 square miles, and has at present a population of nearly 2,500,000. Its geographical position is excellent, bordering as it does on the Caribbean Sea on the north, while toward the east its great river, the Orinoco, flows into the Atlantic. The soil is varied, being extremely fertile on the plateau and rich in mineral resources in other localities, and its plains, or *llanos*, between the Cordillera and the Orinoco abound in good pasturages. Hence agriculture, mining and stock-raising are in a flourishing condition. The main staples are coffee, cocoa, cattle, hides, tonka-beans, cabinet woods and divi-divi. High coffee prices have enriched the planters, and the purchasing capabilities of the people at large have during the past three years been materially increased. What the country required first was peace, then railroads and steamship lines, and now the opening up of its mineral resources. The Yuruari gold-mining district south of the Orinoco, not far from its mouth, is the richest in existence next to California, Australia and the Ural Mountains. Railroads have been tardily built, but foreign capital has during the past five years been invested to a fair extent in this branch of public works. In 1886 only 286 km. (a kilometer equals 0.62 mile) were in running order, 353 km. being built and 1982 km. of concessions granted. The main lines are the one between La Guayra and Caracas, 37 km., the building of which was a great engineering feat, and that between Puerto Cabello and Valencia, while work is being pushed on the line from Guanta to Naricual, 37 km., via Barcelona, to connect with the Neveri coal mines; ground is soon to be broken on the Merida-Maracaybo line, the Carenero-La Guayra railroad, and one to connect the right bank of the Orinoco with the Yuruari gold mines. American and English steamship lines keep up a weekly service between the northern ports of the republic and the United States and Europe, and between Ciudad Bolivar on the Orinoco and New York.

The gold mines are chiefly worked by English companies, but there are also Venezuelan companies. The frontier between Venezuela and British Guiana is ill-defined and in dispute precisely in this gold-mining region. This border dispute has become a burning question between Venezuela and England which can only be settled by arbitration, and will thus be straightened out ere long, no doubt, as soon as both parties can agree about the arbitrator, England suggesting Belgium and Venezuela the United States. The

Congress of American nations to assemble at Washington early in October will probably be appealed to by Venezuela to take cognizance of this vexed question.

Venezuela is all the more open to foreign capital as the national indebtedness is very moderate. The foreign debt is about to be consolidated into 4 per cent. bonds in the amount of £2,675,350 and the home debt into 4 per cent. bonds amounting to £1,078,070, so that the entire indebtedness will not exceed £3,753,420. The Presidential chair is at present occupied by Pablo Rojas Paul, with whose administration the people of Venezuela are more than contented. His term will, however, terminate on February 20 next, while the Constitution forbids his re-election. The most popular candidate is said to be General Raimundo Fonseca, the present Minister of War and the Navy, whose views about the administration of public affairs coincide, it is asserted, with those of the present incumbent.

American trade with Venezuela is most satisfactory and susceptible of notable extension in the near future, our goods being eminently popular. We imported last year \$9,016,360 worth of Venezuelan products, against \$9,920,981 in 1887, and shipped thither domestic goods to the amount of \$3,063,301, as compared with \$3,049,088 the previous year. The amount of coffee received rose gradually from 29,138,035 pounds in 1878 to 60,543,164 in 1888, the latter representing \$8,863,579.

The Coke Strike Ended.

The great strike of the coke-workers in the Connellsville region has been settled and the operators have been defeated. A conference between the representatives of the H. C. Frick Coke Company, the J. M. Schoonmaker Coke Company and the McClure Coke Company was held on the 8th inst., when a satisfactory settlement was made, the workmen being granted an advance of 12 per cent. The scale signed by the operators and workmen is as follows: Mining head and room coal, 95 cents per 100 bushels; cagers, \$2 per run; drivers in shafts and slopes, \$2; in drifts, \$1.90; trackmen, shafts and slopes, \$2; in drifts, \$1.90; trappers, 75 cents; inside laborers, \$1.75; drawers, 55 cents per 100 bushels charged; levelers, 10 cents per oven; yard laborers, \$1.40; ash carters, \$1.50; engineers, \$2.25; chargers, 4 cents per oven; tippie men, \$1.75. The scale went into effect on the morning of the 9th inst., and operations at a majority of the works in the region were at once resumed. The agreement is to remain in force for six months, and no change will be made in wages should the price of coke advance or decline. At the expiration of that time either party can change the scale, provided 30 days' notice is given.

This result of the strike was wholly unanticipated by the operators when it began. It will be remembered that they completely ignored the request of their workmen for a conference on the 27th of July. Firm in the belief that either their agreements with their employees then in force would be respected or else positive that it would be impossible for the threatened strike to assume large proportions, or feeling indifferent about the matter because the price of coke was low, the oper-

ators let the question go by default. But, much to their surprise, never in the history of the region was an agitation so uniformly successful as the strike which was begun on the 1st inst. Agreements and special understandings were thrown to the winds by the determined workmen, and with their united front they pressed on to certain victory. The results might not have been so serious to them if the operators had acted with discretion when the strike was first threatened.

So much for the present, but what of the future? The workmen have thrust a new order of things on the operators. A new adjustment of prices must be made, and coke will not be so cheap in the Connellsville region as it has hitherto been. The workmen may learn later that to win a victory of this kind is not altogether the best thing for them. The decided advance in the price of Connellsville coke which now seems unavoidable will materially help other coke regions to develop their facilities for production. That will mean in a very short time a lessened demand for Connellsville coke; then will come reduced prices again, and of course wages will not be maintained at the present standard. The advance of 12 per cent. causes such a heavy increase in the cost of producing coke that the labor leaders may well ponder over the ultimate fruits of their splendid victory.

Negotiations are on foot for the purchase by English capitalists of another of the prominent iron-works of the country. We are not at liberty to give the name of the concern interested, but will merely say that it is one of the best-managed iron-works in the country, and one that has always paid its owners a very comfortable dividend. The negotiations have reached the point at which the consent of the stockholders is all that has to be obtained. It is considered that the price offered presents such inducements that the completion of the sale is very probable. The persons negotiating the purchase are those who recently successfully accomplished the transfer of the Otis Iron and Steel Company, of Cleveland. Another large iron-works was the subject of negotiations for a time by the same people, but the sale was not consummated, it is understood, because the property had not been sufficiently profitable in the past to base a financial operation of the necessary magnitude upon it. The continuance of these attempts to purchase American works shows that a well-matured scheme exists to secure control of the most profitable American iron and steel enterprises.

This year has witnessed a rapid advance in the work of bringing Indian reservation lands into the market. The opening of Oklahoma made about 2,000,000 acres available. The bargain with the Sioux Indians, if it is ratified by Congress, will add 11,000,000 acres, and the success which is attending the negotiations with tribes dwelling on various small reservations in Minnesota is expected to open 4,000,000 acres more. If the Cherokee strip in the Indian Territory is also purchased, of which the prospect is now good, another tract of 6,000,000 acres will be opened to settlement, making the total area added to the public domain this year reach the enormous amount of 23,000,000 acres. An adequate idea of how vast a body of land this is can be gained only by

comparing it with some Eastern States. It is four times as large as Massachusetts. The combined area of New Hampshire, Vermont, Massachusetts and New Jersey would only about equal it. The half of the Sioux Reservation purchased would alone make two States like New Jersey and leave 1,000,000 acres over.

Condition of Blast-Furnaces August 1.

No material change has taken place in the status of the blast-furnaces of the country since the appearance of our last monthly report. Quite a number of stacks have been blown in and others have blown out, but the production of pig-iron has only slightly increased as compared with a month since. At that time it was deemed probable that production would by this time show a large increase, as so many furnaces were reported to be preparing to resume operations, but it seems that enough furnaces have been obliged to lie off for repairs to prevent much enlargement of the output. In the present condition of the iron market this is a favorable circumstance for the manufacturers, as there will be no immediate danger of an oversupply of iron to check the improving tendency in prices. It was feared at one time that the strike of the coke-workers in the Connellsville region would compel a serious curtailment of production, but that has fortunately been adjusted. The condition of all the furnaces in the country on August 1, as compared with the preceding three months, was as follows:

	Total stacks.	In blast.	Capacity per week.	Out of blast.	Capacity per week.
Aug. 1...	546	286	145,890	261	68,485
July 1...	544	285	141,419	259	69,367
June 1...	545	286	137,119	259	73,856
May 1...	545	286	144,343	249	64,762

The condition of the anthracite furnaces in detail was as follows on the 1st of the present month:

Anthracite Furnaces August 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	23	11	3,697	12	3,841
New Jersey.....	14	4	1,867	10	3,604
Spiegel.....	3	2	118	1	100
Pennsylvania:					
Lehigh Valley....	46	25	9,630	20	6,893
Spiegel.....	1	1	75	0	0
Schuylkill Valley..	32	13	5,042	19	5,181
U. S. Susquehanna Valley	17	6	2,324	11	2,153
Lebanon Valley....	16	15	7,573	1	208
L. S. Susquehanna Valley	21	10	3,951	11	2,857
Totals.....	173	88	34,377	85	24,837

For the past 13 months our records show the following:

	Furnaces in blast.	Capacity per week.
August 1.....	88	34,377
July 1.....	89	34,142
June 1.....	91	34,386
May 1.....	95	35,315
April 1.....	102	37,977
March 1.....	103	37,937
February 1.....	107	39,187
January 1, 1889..	107	38,726
December 1, 1888.	99	34,879
November 1.....	95	33,645
October 1.....	95	33,728
September 1.....	92	33,541
August 1.....	93	33,397

With one less furnace in operation than a month since, the weekly production of anthracite pig-iron is at practically the same rate, but this is likely to be very soon increased with the number of stacks now preparing for resumption. But little has happened among the anthracite furnaces since our last report that is worthy of note. The Passaic Spiegel furnace was blown out July 31 to remain out until September. Two more of the Bethlehem furnaces were blown in. The Pottstown

Iron Company's furnace was blown out during July for repairs. Norristown blew in July 30. One of the Henry Clay stacks is also out. One of the furnaces at Scranton was blown out for repairs, and so also was one of the Chickies. Both of the St. Charles stacks are now blowing.

The following table shows the condition of the coke furnaces on the 1st of the month:

Coke Furnaces August 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	3	1	1,100	2	2,277
Pennsylvania:					
Pittsburgh district.....	30	20	24,368	0	0
Spiegel.....	1	1	868	0	0
Shenango Valley..	19	14	10,073	5	2,856
Juniata and Conemaugh valleys.	17	10	5,825	7	1,485
Spiegel.....	1	1	700	0	0
Youghl. Valley....	5	4	1,622	1	730
Miscellaneous.....	4	3	1,686	1	650
Maryland.....	1	0	0	1	179
West Virginia.....	6	2	1,418	4	1,488
Ohio:					
Mahoning Valley..	14	10	7,800	4	2,638
Central and Northern.	16	11	7,006	5	3,864
Hocking Valley....	14	2	829	12	3,813
Hanging Rock.....	13	6	1,720	7	1,410
Indiana.....	2	0	0	2	389
Illinois.....	12	9	10,270	3	1,725
Spiegel.....	1	1	640	0	0
Wisconsin.....	4	1	500	3	1,350
Missouri.....	6	2	1,094	4	2,218
Colorado.....	2	0	0	2	940
The South:					
Virginia.....	12	9	4,587	3	1,250
Kentucky.....	4	2	637	2	630
Alabama.....	26	20	12,278	6	3,262
Tennessee.....	11	7	3,600	4	1,500
Georgia.....	2	1	609	1	310
Totals.....	216	137	90,720	80	34,964

As compared with the 12 previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
August 1.....	137	99,720
July 1.....	136	99,548
June 1.....	135	91,771
May 1.....	147	98,899
April 1.....	151	100,060
March 1.....	150	100,757
February 1.....	150	98,513
January 1, 1889..	157	108,726
December 1, 1888.	151	101,744
November 1.....	146	94,695
October 1.....	137	85,461
September 1.....	133	81,082
August 1.....	122	74,855

The changes reported during the month were not specially significant. Repairs to the Troy stack recently blown out were completed, and it was again started. All the Cambria Iron Company's stacks are now running. The Bellefonte was again blown in July 14. The Etna Furnace in the Shenango Valley is adding three Whitwell stoves to its equipment. The large Victoria in Virginia is at length in successful operation. Riverside, in West Virginia, is being rebuilt. No. 2 Cherry Valley in Ohio was blown out July 12 for repairs. In the Hanging Rock district the Hamilton has gone out and the Sarah was blown in. In the Hocking Valley the Bessie was blown out, and in the Mahoning Valley the Mary suspended operations to renew the bosh. In Alabama the Mary Pratt was blown in, one of the Ensley stacks was blown out for repairs estimated to require but three weeks, and one Woodward was blown out to relined. In Tennessee one South Pittsburgh was temporarily laid off, while the second Rockwood was relighted on the 27th. In Illinois one of the Union furnaces has been blown in, while in Wisconsin one of the Bay View has been blown out.

In Allegheny County, Pa., the Carrie Furnace Company blew in their new stack on July 26. There are now 21 blast-furnaces in Allegheny County, and they were all in blast on August 1, but since then both the Carrie stacks have been banked, on account of a strike of the workmen.

The charcoal furnaces made the following exhibit at the beginning of the month:

Charcoal Furnaces August 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England.....	14	7	610	7	480
New York.....	10	3	412	7	520
Pennsylvania.....	23	3	330	20	749
Maryland.....	8	12	225	6	340
Virginia.....	23	3	190	20	756
West Virginia.....	3	0	0	3	165
Ohio.....	13	7	384	6	291
Kentucky.....	12	12	220	0	0
North Carolina.....	12	1	70	1	70
Tennessee.....	8	6	1,531	2	100
Georgia.....	2	0	0	2	114
Alabama.....	10	9	1,908	1	240
Michigan.....	25	11	3,801	14	3,720
Missouri.....	3	1	281	2	528
Wisconsin.....	7	3	1,411	4	491
Texas.....	1	1	173	0	0
California.....	1	0	0	1	120
Wash. Ter.....	1	1	175	0	0
Oregon.....	1	1	181	0	0
Totals.....	157	61	11,902	96	8,684

In the following table is presented the record of the active charcoal furnaces for the past 13 months:

	Furnaces in blast.	Capacity per week.
August 1.....	61	11,902
July 1.....	60	10,727
June 1.....	60	10,962
May 1.....	54	10,629
April 1.....	53	10,173
March 1.....	55	11,081
Feb. 1.....	62	11,219
Jan. 1.....	67	11,946
Dec. 1.....	71	12,286
Nov. 1.....	73	12,724
Oct. 1.....	71	11,619
Sept. 1.....	67	11,243
Aug. 1.....	65	11,137

News from the individual charcoal furnaces is not specially noteworthy. In Pennsylvania the Carlisle chilled on the 22d, and Falling Spring is reported to have suffered the same misfortune. In Maryland the Muirkirk was banked on the 1st inst. for want of ore, the persistent rains having interfered with mining. In Ohio the Madison is again in operation, having completed repairs. In Michigan the Detroit Iron Furnace Company's stack has resumed, as also has the Newberry. The Sligo in Missouri was blown out on the 24th for repairs. In Alabama the Tecumseh was blown in on the 1st inst., after a month's idleness, during which a new hearth and bosh were supplied, and the new Attalla stack is turning out an excellent product, while one of the Woodstock furnaces has been laid off. The new cold-blast charcoal furnace of Keasler & Vickers, at Hughes Springs, Texas, was blown in but soon chilled. Another attempt to start it will be made. In Wisconsin the National has resumed operations.

California is truly a great State. Out of the total area of 98,000,000 acres there are 20,000,000 acres of government lands as yet unentered. About 3,000,000 acres are available in the foot-hills of the Sierra Nevada Mountains, where there are numerous living springs and where every available product of the valleys can be raised. The value of the products of California this year is in round numbers \$200,000,000. If we add to this that of the raw material of manufactures we will have a total product of \$300,000,000. It is nearly three times as large as New York, more than twice as large as all the States of New England, and nearly double in area the next largest State in the Union. It has about two-thirds the area of France, the German Empire or the Empire of Austria. It is one-fourth larger than Great Britain and Ireland. Roses bloom all the year round. It has been eminently free from epidemics and contagious diseases. Its population at present writing cannot be less than 1,400,000, so that it has nearly trebled in 20 years.

OBITUARY.

HENRY DU PONT.

Gen. Henry Du Pont, the venerable head of the extensive powder manufacturing firm of E. I. Du Pont de Nemours & Co., died at his country residence, near Wilmington, Del., on the 8th inst. His death resulted from general debility, and occurred on the seventy-seventh anniversary of his birth. General Du Pont was born August 8, 1812, in the family homestead where his long and useful career ended. He was the second son of Eleuthere Irenee Du Pont de Nemours, a distinguished Frenchman who in 1800 sought asylum in this country from Jacobin persecution, and founded the famous powder-works on the banks of the Brandywine River, Delaware. The product of the Brandywine mills has been an important factor in every American war since the Revolution, and likewise in several European conflicts, notably the formidable struggle in the Crimea, when large cargoes of Du Pont powder were shipped for the use of the allied armies. During the war of the rebellion the company, at the request of President Lincoln, sent one of their members to Europe to make purchases for the Union army. The firm kept abreast of the powder-manufacturing of the world, and in all their enterprises General Du Pont was the dominating spirit. Enterprise, courage, fair dealing and liberality were the characteristics of his business life. General Du Pont's diversion was agriculture. He was probably the most extensive land-owner in Delaware, and his holding was the most valuable in the State. Mrs. Du Pont survives her husband, as do six of the eight children born to them. Col. Henry A. Du Pont, president of the Wilmington and Northern Railroad and a member of the firm of E. I. Du Pont de Nemours & Co., is the oldest of the children. William Du Pont, of Wilmington, and also a member of the celebrated firm, is the youngest.

Fluctuations in British Prices.

The following table, which is taken from a recent circular of Matheson & Grant, of London, possesses much interest

Articles.	July, 1884.	July, 1885.	July, 1886.	July, 1887.	July, 1888.	January, 1889.	July, 1889.
Steam coal, f.o.b. Cardiff.....	£ s. d. 0 11 6	£ s. d. 10 3 0	£ s. d. 8 9 0	£ s. d. 9 3 0	£ s. d. 10 6 0	£ s. d. 13 0 0	£ s. d. 13 6
West Hartley coal, f.o.b. Newcastle.....	0 9 6	0 9 0	8 3 0	8 6 0	8 3 0	9 0 0	9 6
Pig-iron at Glasgow, No. 3.....	2 1 6	2 1 0	1 9 0	2 6 2	1 6 2	2 5 2	4 0
Pig-iron at Middlesborough, No. 3.....	1 17 0	1 12 0	1 10 0	1 14 6	1 12 0	1 14 0	2 0
Iron ship-plates at Middlesborough.....	5 0 4	15 0 4	7 6 4	12 6 4	17 6 5	12 6 6	5 0
Iron bridge-plates in South Yorkshire.....	6 15 0	6 0 5	5 0 5	7 6 6	5 0 6	10 0 7	0 0
Steel ship and bridge plates.....	7 15 0	7 2 6	5 0 6	5 0 7	0 0 7	10 0 7	0 0
Steel rails, f.o.b.....	5 0 5	0 0 4	0 0 4	3 0 4	0 0 4	2 6 5	0 0

at present, in view of the improved condition of the iron trade in Great Britain. The prices given are all per ton.

The decline of immigration is noticeable. During the last month 24,716 immigrants were landed at Castle Garden, against 28,690 in July, 1888. Since January 1 the falling off, compared with the previous year, exceeds 100,000. The largest is from Great Britain and Ireland. The difficulty in finding employment and the rival attractions of South American countries account for the change.

A dispatch from Harrisburg says there is not now likely to be any further trouble among the employees of the Pennsylvania Steel Company. They were notified

of an increase of wages on Tuesday morning. The increase is from 2½ to 10 per cent, and restores the wages paid before the reduction, several months ago.

A French Tin-Plate Works.

During the last few years, says *La Nature*, the tin-plate industry has made great strides. The cause is to be ascribed principally to the ever-increasing augmentation of the manufacture of all kinds of alimentary preserves. In one of the least industrial departments of France—Morbihan—there is a factory in which the manufacture of tin-plates has assumed great importance. The works of Hennebont are about 2 miles above Hennebont, a little seaport 4½ miles from the L'Orient roadstead, ascending the estuary of the Blavet. The place in which the valley is situated is called Kerglaou, which, in the Breton language, signifies "the village of rain." Having lately had occasion to visit those regions, it was considered that a description of a metallurgical establishment planted as though by chance in a country where the sky is so rarely obscured by the black smoke of the chimneys of large factories would not be without interest.

The works of Hennebont were established in 1860 for the manufacture of sheet-iron and tin-plates. During the first years the production of the works was about 750 tons per year. In 1885 it reached 10,000 tons, and at present it exceeds 12,000 tons. At the same time the little port of Hennebont, formerly almost completely deserted, frequented only by some fishermen, became very important. All the crude materials necessary for the manufacture come by ship to the locality. The materials are discharged in the port, unloaded in barges which ascend the Blavet, and towed by steam or horse power to the quays of the factory. The chief crude materials employed are coal, which comes direct from England, there being consumed on an average from 70 to 80 tons per day, pig-iron, scrap-iron, carbonate of lime, magnesia, china clay, tin, chloride of zinc, grease, and the acids used in the manufacture of tin-plates. About 700 workers of both sexes are employed in the works, and the motive power used is about 1000 horses, one quarter of which is sup-

plied by a turbine fed by the Blavet, the remainder by different steam-engines. The work of the factory may be classified into five principal parts: 1. The manufacture of the pig and scrap iron into steel ingots. 2. The manufacture of the ingots into bars and thin sheets. 3. The preparation of the sheets for the process. 4. The manufacture of the tin-plates. 5. The decoration and stamping of the tin-plates. We intend to pass rapidly in review these different phases of manufacture.

The Manufacture of the Pig into Ingots.—The manufacture by the ancient methods of puddling and refining has been completely abandoned at the works of Hennebont and replaced by the manufacture of soft steel into ingots by means of Siemens-Martin furnaces arranged specially for the treatment of phosphorus and sulphurous

pig-iron. At Hennebont there are two Siemens-Martin furnaces, each producing 22 tons of steel in 24 hours. These furnaces each employ two shifts of 30 men, who relieve each other at each casting. The time necessary for charging and obtaining the casting varies from 9 to 11 hours; two chargings can thus be made in 24 hours. The furnace is first charged with carbonate of lime, which at once forms, on contact with the heat, a basic slag of lime, which takes up the sulphur and the phosphorus of the pig and completes the purification of the metal. The furnace is lined with magnesia, on which this slag does not act. In spite of these precautions, it sometimes happens that, the pressure of the gases being too strong, the heat becomes too great, melting the brick of the arch, which crumbles. When the steel is obtained it is cast into ingot molds of conical form, about 3 feet in height, and placed on a trolley in fours. The molds communicate by a tube in the lower part, so that the four molds are filled at the same time.

The Manufacture of the Ingots into Bars and Sheets.—This part of the manufacture employs about 300 workmen, and brings into play almost the whole of the motive force. The steel ingot is first drawn into bars, and then into thin sheets or black iron. The steel ingots are heated in reheating furnaces, and then taken to a steam-hammer, which shapes them and cuts them into two. The pieces are heated over again for half an hour, then passed to the bar-trains, of which there are three. The bar-train is an ordinary rolling-mill, which draws the iron out, making bars from 20 to 23 feet in length, 4 inches wide and 0.4 inch in thickness. These bars are at once cooled by immersion in water and cut into small strips of from 8 to 12 inches in length, according to the length of the sheets to be made. These steel strips are taken red-hot to annealing-furnaces, and then rolled by means of plain cylinders. On attaining a certain length, they are folded into two by means of a special machine, and again heated. They are then once more rolled to stretch them further, but two sheets are now rolled together, the first sheet having been folded into two. By other similar successive operations they are folded into fours, and then into eights. A bundle is thus obtained, which is taken to the shears, where the desired dimensions are given; finally the eight sheets are separated with the aid of a sword bayonet. When the cooled sheets do not separate it is due to the iron being of a bad quality. The crude sheets thus obtained are put into rectangular cast-iron boxes furnished with a covering. These boxes are introduced into the lower part of the annealing-furnace, and after a sufficiently long exposure to heat the sheet is withdrawn from the boxes and put to cool. The object of this operation is to take away the traces of the cold hammering. The sheets are then passed under a series of cylinders of polished steel, where they are brightened, and they are the black sheets placed on the market.

The Preparation of the Sheets for the Tinning Process.—The sheets are dipped into large tubs containing water and sulphuric acid. Hydrochloric acid or nitric acid may also be used. At Hennebont from 5000 to 6000 kg. (5 to 6 tons) of sulphuric acid are used per day. The sheets are put to harden in the acid-bath for some minutes, and are then passed to the plating department. Formerly, when the sheets were not so well prepared and were made of iron of an inferior quality, the dipping demanded more complicated manipulation. After hardening in the acid the sheets had to be heated in a furnace to a full-red heat, then hammered to remove the oxide, then passed to the hard rolling mill, and lixiviated for 12 hours

in water with bran, agitated again in an acid-bath, rubbed with oakum and sand, and finally kept in water. At present all these operations are dispensed with. The steeping in acid water and the cleansing are performed rapidly by the aid of steam-power.

The Manufacture of the Tin-Plates.—The process of plating is the same at Hennebont as elsewhere. The tin bath is composed of equal parts of block tin and alluvial tin, a small quantity of copper being added. With regard to alluvial tin it is time to recall to mind that the whole coast of Morbihan contains lodes of oxide of tin, but too rare and too much scattered to be worked. The shafts of Piriac, sunk at Castelli, opposite the tomb of Almanzor, have been filled in long ago. But the lodes, corroded by the waves, have produced a stanniferous sand which some people explore even at this day. Tin, if mining operations are well directed, will probably become a source of future wealth for these districts. After dipping, the plates pass through a bath of boiling grease, then one of melted tin containing a little chloride of zinc. On coming out of this bath the plate is brushed and subjected to a second plating similar to the first. The plates are then distributed to women, who put them in chopped rice straw and rub them with pads of wool. The tin-plate is then finished. Some of the tin-plates are put into the market; others are taken to the printing-works. This special manufacture of plating gives employment to 160 workpeople, men, women and children, divided into 19 plating-yards, producing from 500 to 600 boxes of tin-plates per day. Two furnaces for refining tin and one for annealing the tin ashes are included in the yards of the plating-works.

The Decoration and Stamping of Tin-Plates.—This manufacture, carried on at the works since 1868, is of great service to the manufacturers of preserved foods for ornamenting their boxes. Ten improved mechanical presses enable the lithographer to do the writing and the design on the spot upon the stone, which considerably shortens the work. The factory employs for this purpose draftsmen, compositors, lithographers, writers, &c. In concluding the description of the works it may be mentioned that there is a fitting-shop, containing a planing-machine, punching-machines, vises and slide-lathes for repairs. There are also engines for driving the rolling-mills, a sawmill, where there are made from 3000 to 4000 wood boxes for packing the tin-plates, a carpenters' and joiners' workshop for the manufacture of machine models, a gas-works for lighting the factory, which is kept going night and day, a shop for cutting the iron and manufacturing frying-pans. Some years ago there were also seven furnaces for enameling tin-plates, but this industry has been abandoned. It may be added that the forges of Lockrist, situated a little above the Hennebont Works, and employing about 200 workpeople, also roll the iron and assist in the manufacture of the tin-plates. But they are relatively of little importance.

Americans must look after their interests in Guatemala. An influential paper published at the Venezuelan capital says a treaty between that Government and Germany has been made recently and ratified which contains "provisions and privileges never before accorded by South American powers to any nation," while a treaty concluded some years ago with the United States is no longer regarded as valid.

BACOL & Co., 107 and 109 Oliver street, Boston, have purchased from Charles G. Lundell his entire stock of Swedish iron, both in warehouse at Boston and New York and afloat.

PERSONAL.

Ex-Mayor Abram S. Hewitt, Oscar Strauss, ex-Minister to Turkey, and William E. Dodge returned from Europe by the Etruria on Saturday last.

John C. Parkes severed his connection with the Illinois Steel Company, of Chicago, on the 10th inst. Long in the trade, he was a familiar figure to every man who had business relations with the North Chicago Rolling Mill Company before the consolidation of all the Chicago steel-rail plants. He was in the employ of that company for 26 years. What is now known as the Bay View Works, at Milwaukee, became the property of the North Chicago Rolling Mill Company through the failure of the Milwaukee Iron Company in 1877, and Mr. Parkes took charge of the works as superintendent, which position he held until the completion of the new works at South Chicago, in 1881, when he was transferred to Chicago and made general manager for the company. He continued in the latter position until the organization of the new company this year, when his title was changed to manager of the North and South Chicago Works. Thoroughly conversant with every detail of the business, he mastered many obstacles that would have swamped a man of less capacity and sagacity. He will be missed from his old position by all who have been fortunate enough to form an acquaintance with him, and especially by those who have had the pleasure of an intimate friendship. He has not yet decided whether he will retire permanently from active life or re-engage in some other enterprise.

Mayor Grant, in accordance with the authority conferred at a recent conference of citizens of New York, on Saturday appointed four World's Fair committees of 25 members each, who are to act on the matters of finance, legislation, site and permanent organization. Among those chosen to represent the several industries are John H. Graham, hardware; Charles A. Moore, machinery; Henry R. Towne, mechanical engineers; John Bogart, civil engineers; Chas. J. Gillis, plumbing and steam-fitters.

John D. Ranken, vice-president of the Ranken & Fritsch Foundry and Machine Company, of St. Louis, will sail for Europe on the 17th inst. on a three-months' pleasure trip.

Harrison Bortz, who has been superintendent of the Lehigh Iron Company, at Aineyville, Pa., since 1869, has resigned his position and has been succeeded by Frank Rammel, who has been book-keeper for the company for about 18 years.

The question, How best to utilize the power of Niagara? is again brought into prominence by an inventor who claims the mythical prize of \$100,000 offered to the one who successfully solves the problem. The present device is described as an endless chain, 200 feet long by 20 wide, each link of which is provided with a turbine wheel so arranged as to be acted upon by the water. When set across the water the chain moves with "resistless force." It is stated that a working model, placed in a small box, generates 1 horsepower in a slow current, and one instantly imagines that if placed in the path of the falls it would generate 100 horse-power. From this it would appear that inventors have dropped from mammoth dynamos that were to furnish light, heat and power for New York and the rest of the United States, and subterranean canals the rushing waters of which were to drive huge turbines of incalculable power, down to a collection of wheels strung on a chain.

TRADE REPORT.

Chicago.

Office of *The Iron Age*, 59 Dearborn street,
CHICAGO, August 12, 1889.

Pig-Iron.—Transactions for the week were confined to small lots on the various classes of Iron. Sellers of Charcoal and Coke Irons did a fair business. Agents for Southern Irons had a good many inquiries which they could not fill. Mottled and Gray Forge are wanted in small lots, immediate shipments, but the Iron cannot be had. A lot of 500 tons could not be supplied at the market price. Makers of Southern Iron are notifying their agents that they will be in position to make more prompt deliveries in September. Buyers who are in the market want the Iron at once to get out material under contract, so that next month's shipments will not benefit them now. The demand for Foundry Iron is about equal to the supply. Prices are, if anything, stronger than heretofore, and remarkably uniform on each grade. The seller names his price, the buyer takes the Iron at that figure or drops to a cheaper grade. Sales agents are not offering concessions, and buyers apparently do not expect any. On the other hand, there is no effort to "bull" prices. The market shows a healthy condition of trade, and if the present rate of consumption continues will remain steady at prevailing figures for the next six weeks at least, on all the leading brands. There is some expectation that prices on Coke will be advanced as a result of the late settlement with the strikers. Whatever advance is made will likely be added to the present price of Foundry Iron. Quotations are as follows, f.o.b. Chicago: Bessemer, \$17.25; Lake Superior Charcoal, \$18.50 @ \$19; Local Coke, No. 1, \$16; No. 2, \$15; No. 3, \$14; Chicago and Bay View Scotch, No. 1, \$16; American Scotch (Blackband), \$18 @ \$18.50; Southern Foundry, No. 1, \$16.50; No. 2, \$15.50; No. 3, \$14.50; No. 1, Soft, \$15.50 @ \$15.75; No. 2, \$14.50; Gray Forge, \$14.50; Mottled, \$14; Tennessee Charcoal, No. 1, \$17.75; Alabama Car-Wheel, \$24 and \$25; Hanging Rock, No. 1, \$18.50; Jackson County, No. 1, \$17.50 @ \$18.

Bar-Iron.—Mills are maintaining the advance and have been getting considerable business in small lots. Common Iron is quoted at 1.65¢ @ 1.70¢; Single Refined, 1.75¢; and Best Refined, 1.85¢, f.o.b. Chicago, by makers. Some sales of small lots were made at 1.55¢, mill, Youngstown, though large orders for September delivery were refused at that price by the same parties. Manufacturers are very confident that they will be able to get better prices within the next 30 days, and are not booking more orders at present than are necessary to keep their mills in work. Large buyers are getting on to the scheme, however, and dividing up their orders so that they are liable to have more material contracted for than makers are aware of by the time another \$2 per ton advance occurs. Store prices by jobbers range from 1.70¢ to 1.75¢ for Common Iron, 1.85¢ for Single Refined and 1.90¢ to 2¢ for Best Refined.

Structural Iron.—There is a big demand for building shapes. Contractors are howling for delayed orders, and new work is retarded because the necessary material cannot be had. The market is in excellent condition for advancing prices, and the mills have taken advantage of the opportunity. They now quote as follows, f.o.b. Chicago: Angles, 2.25¢ @

2.35¢; Universal Plates, 2.30¢ @ 2.40¢; Sheared Plates, 2.35¢ @ 2.40¢; Tees, 2.55¢; Beams and Channels, 2.90¢. From store: Angles, 2.40¢; Tees, 2.65¢ @ 2.70¢; Beams and Channels, 3.40¢

Plates, Tubes, &c.—Jobbers are disposed to make the most of the situation, and are asking an advance of 1/10¢ on nearly everything in the Sheet and Plate line. It is possible that our prices cannot be shaded, but we are reliably informed that all orders can be filled at the following quotations from store: Iron Sheets, Nos. 10 to 14, 2.60¢ @ 2.70¢; Steel, Nos. 10 to 14, 2.75¢ @ 2.80¢; Tank, Steel and Iron, 2.50¢ @ 2.60¢; Steel Plates, Shell, 3¢; Flange, 3.50¢; Fire-Box, 4.25¢; Otis, 5.50¢; Ulster Iron, 3.75¢; Boiler-Rivets, 4¢ @ 4.25¢; Boiler-Tubes, 52 1/2 % discount on 1 1/2-inch and less and 57 1/2 % discount on 2-inch and larger. Manufacturers are asking on 10 and 14 Iron Sheets 2.30¢; on Steel, 2.40¢, and on Tank Steel and Iron 2.25¢ at mill, and refuse to take orders for any kind of Sheets or Plates for delivery inside of three or four weeks.

Sheet-Iron.—There is an excellent trade in first and second quality Sheets. Mills are plied with orders that they cannot touch. Their price on No. 27 is 3.05¢ @ 3.10¢ for small lots that can be sandwiched in with previous contracts. The principal reason that light Sheets are scarce is because mills are making a better profit by rolling the heavy gauges. If consumers will pay on a basis of 3.50¢ for No. 27 they can get plenty of it in a very brief period. From store jobbers quote No. 24 at 3.10¢; Nos. 25 and 26 at 3.20¢ and No. 27 at 3.30¢. Stocks are running short, and interchanging among dealers has begun.

Merchant Steel.—Trade continues quite active in small lots. The special effort on the part of sellers to persuade buyers into placing their contracts immediately, on the ground that prices will shortly advance, is causing them to hold off on their purchases. There are quite a number of consumers who are in the habit of placing their orders during August and September, and sellers have been so anxious to have these buyers make out their specifications that they have begun to feel that the chances of an advance are not so great as is represented. Consequently they are buying small lots to cover their immediate wants and waiting developments of the next 30 days before contracting for the material they will want during the next year. Manufacturers quote, f.o.b. Chicago, as follows: Soft Steel Bars, 1.90¢ @ 2¢; Spring Steel, 2.25¢; Tire Steel, 2.25¢; Toe Calk, 2.30¢; Open-Hearth Machinery, 2.75¢. Jobbers quote from store: Mild Machinery, 2.10¢ @ 2.20¢; Tool, 7.75¢ @ 8.50¢; Bessemer Machinery, 2.40¢ @ 2.60¢; Open-Hearth Machinery, 3¢; Sheet, 7¢ @ 10¢; Tire, 2.30¢.

Steel Rails.—The demand for heavy sections for this year's delivery is falling off. Several orders that have been on the market for some time were closed last week. Manufacturers continue to quote \$29 @ \$30. Light Steel Rails are in pretty good demand at \$33 @ \$34 for 30-lb and \$38 @ \$40 on 12-lb and 20-lb. At the moment there is a great demand for light Iron Rails, and mills that have obtained considerable work are inclined to get higher prices, which now range from \$35 to \$37, according to weight.

Track Supplies.—This class of material is in better request recently, and manufacturers who make a specialty of Splice-Bars, &c., are taking a good many orders. Prices are as follows, f.o.b. Chicago: Steel Splice-Bars, 1.85¢ @ 1.90¢; Iron Splice-Bars, 1.80¢ @ 1.85¢; Spikes, 1.95¢ @ 2¢; Bolts, Square Nuts, 2.50¢ @ 2.55¢; Hexagon, 2.60¢ @ 2.70¢.

Old Rails and Wheels.—The demand for Old Rails is increasing and prices advancing. On one lot of 500 tons \$22.50 was obtained. For another lot of 250 tons \$22.75 was paid. The latter price was about 25¢ a ton above the market, and is the highest price paid, so far as can be learned. Stocks are scarce and it is probable that consumers will be required to duplicate the price on urgent demand. Quotations range from \$22.50 to \$23. There is not much doing in Old Steel Rails. Long pieces are quoted at \$17.75 @ \$18, and short pieces, \$14.50 @ \$15. Wheels are in fair demand at \$18.50. Sellers are holding for \$19. The market is firm and stocks scarce.

Scrap-Iron.—There is only a fair request for the various grades of Scrap. Dealers' quotations are as follows per ton of 2000 lb: No. 1 Forge, \$18; No. 1 Mill, \$14; No. 2 Mill, \$9; Car-Axles, \$23 net ton; Horseshoes, \$19; Wrought Turnings, \$11.50; Cast Borings, \$8.75; Cast Machinery, \$12; Leaf Steel, \$15; Coil Steel, \$14; Locomotive Tires, \$16; Mixed Country Scrap, \$13.

Hardware.—The demand for the full line of Hardware is very good and increasing with remarkable rapidity for the season. House-Furnishing Specialties, Coal-Hods, Tin and Hollow-ware, Cutlery and fall goods are being booked for future delivery. Among the manufacturers the only point of interest is the dissolution of the Pick and Mattock Manufacturers' Association. The influence of the association has not been recognized in the jobbing and retail trade, and its demise will not affect the market price of the goods.

Nails.—Manufacturers are endeavoring to get all the possible benefit from the late trust movement. So long as no definite plans are adopted the supposition that they will be is holding makers together and stiffening up the market. Some of the large buyers got their orders placed first before the announcement of an advance was made, and now certain mills have withdrawn former quotations. Manufacturers are now asking \$1.70 at mill for Steel Cut Nails. This looks like a big advance, and how well it will be maintained will somewhat depend upon what is done at the meeting of the manufacturers on the 14th inst. Wire Nails are quoted at \$2.25, f.o.b. Chicago, by makers. Jobbers quote Cut Nails at \$1.85 and Wire Nails at \$2.30 in carload lots, and \$1.90 for Cut Nails, and \$2.35 for Wire Nails in small lots from store.

Barb-Wire.—The demand is increasing for small lots. Jobbers quote Galvanized at 3.35¢ and Painted at 2.75¢, in small lots from stock. Somebody is shading these prices in various parts of the country.

Pig-Lead.—Unfavorable advices from other points have depressed values here, though the decline has not been large. Sales for the week foot up only a few hundred tons, mostly at 3.80¢. Spot Lead is in light demand, with August and September held firmly; 3.75¢ is bid.

The Youngstown Bridge Company, Youngstown, Ohio, are a new company recently organized for building Iron and Steel Bridges, Roofs, Turn-Tables and Structural work. The officers are James Neilson, president; L. E. Cochran, vice-president; B. F. Boyd, secretary and treasurer; J. M. Macdonald, general manager, and W. L. Cowles, chief engineer. Their buildings are completed and the machinery nearly all in place. They will be ready to commence active operations about September 1st. John McLaughlin will be in charge of their Chicago branch at 59 Dearborn street.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st.,
St. Louis, August 12, 1889.

Pig-Iron.—The general situation remains unchanged, prices are steadily hardening and while the figures as quoted herewith generally represent the basis that sales are made on, yet in some cases, where a particular brand is required or prompt shipment wanted, an advance of 25¢ is not unusual. There is a disposition among the furnaces to hold their stock out of the market, for the present at least, as the general opinion among them is that the market has only commenced to move, and six weeks or two months hence will be a more favorable opportunity to sell than at present, although at the prices quoted to-day there is a clear advance of 50¢ per ton and in some cases 75¢ per ton over those quoted two months ago. Notwithstanding this action on the part of the furnaces a careful examination shows that stocks are only moderately heavy, and with a strong demand the furnace banks would soon be depleted. During the week under review the bulk of orders that were placed was mostly for small lots, but in the aggregate the business transacted was quite satisfactory. For ordinary-sized lots we quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry, \$15.75 @ \$16.00
Southern Coke, No. 2 Foundry, 14.75 @ 15.50
Southern Coke, No. 3 Foundry, 14.50 @ 14.75
Gray Forge, 14.00 @ 14.25
Ohio Softeners, 17.00 @ 19.00
Lake Superior Charcoal, 20.00 @ 21.50

Missouri.

Charcoal Foundry, No. 1, 16.25 @ 16.50
Charcoal Foundry, No. 2, 15.00 @ 15.50

Tennessee.

Charcoal Foundry, No. 1, 17.50 @ 18.00
Charcoal Foundry, No. 2, 17.00 @ 17.50
Connellsville Coke, f.o.b. East St. Louis, \$4.40; St. Louis, \$4.55.

Bar-Iron.—The improved tone which has been the subject of comment in this column for some weeks past continues to be the feature. Prices are firm and are strictly adhered to, as follows: Small lots from store from 1.8¢ to 1.85¢. Carload lots from 1.65¢ to 1.67½¢.

Barb-Wire.—A substantial improvement is noticeable in this department, at least as far as volume of business is concerned. Prices, however, for some unknown reason fail to improve and are quoted as heretofore, as follows: From 2.75¢ to 2.80¢ for Painted, and from 3.35¢ to 3.40¢ for Galvanized; carload lots at from 2.65¢ to 2.70¢ for Painted and 3.25¢ to 3.30¢ for Galvanized, f.o.b. St. Louis.

Louisville.

LOUISVILLE, KY., August 12, 1889.

The market has remained firm during the past week, and parties desiring to buy have been compelled to pay the full market price. There is a feeling on the part of some purchasers that if they do not buy at the present time they will run the risk of paying higher prices in the immediate future. A round lot of Gray Forge, Mottled, and No. 2 Soft was sold here during the week on a basis of \$13.25 for G. F. and \$13.50 for No. 2 Soft. Car companies are very full of work and have been free buyers, in some instances anticipating future contracts, believing that the market justifies them. The scarcity of Coke in the Southern district is curtailing the output and the furnaces are not making as much Iron as usual. The railroads in this vicinity are following the example of the Pennsylvania Railroad in buying cars. An order for 500 was placed last week, and further buying is contemplated on the part of other companies. Old Rails and Wheels are very scarce and hard to

find, and the market is very strong; \$23 is the asking price.

Southern Coke, No. 1 Foundry, \$15.00 @ \$15.50
Southern Coke, No. 2 Foundry, 14.50 @ 15.00
Southern Coke, No. 3 Foundry, 13.75 @ 14.25
Gray Forge, 13.25 @ 13.75
White and Mottled, different grades, 12.75 @ 13.25
Silver Gray, different grades, 13.25 @ 13.75
Southern Charcoal, No. 1 Foundry, 16.50 @ 17.00
No. 1 Mill, 15.00 @ 15.50
Southern Car-Wheel, standard brands, 22.00 @ 23.00
Southern Car-Wheel, other brands, 18.25 @ 19.75
Hanging Rock Coke, No. 1 Foundry, 15.75 @ 16.25
Hanging Rock Charcoal, No. 1 Foundry, 19.75 @ 21.25
Hanging Rock, Cold Blast, 21.00 @ 23.00

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts.,
CHATTANOOGA, August 12, 1889.

Pig-Iron.—The tendency of the market appears to be toward a further slight advance in prices in the near future, but whether this will be realized is by many doubted. The warehouse storage system inaugurated some months since has undoubtedly acted as a sort of balance-wheel in regulating the market, and, while furnaces so far have availed themselves of it but little, nevertheless the opportunity is there ready for use at any moment if desired. The demand for both Forge and Foundry has somewhat increased from the Northern interior, also Western points, and about the only basis of prices that can be given is to note the sale of 1000 tons No. 3 at the furnace at \$12.10, free of commissions. The leading Foundry Irons are selling at \$13 @ \$13.50 in 50 and 500 ton lots at the furnaces, and say 50¢ less for lower grades as they go down. Freights remain the same, with occasionally an exception, where they are either slightly raised or lowered to Northern and Western points, as circumstances require it. To many of these points they are now the same from Birmingham as from Chattanooga.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
PHILADELPHIA, Pa., August 13, 1889.

Pig-Iron.—The market has not shown much activity during the week; some people call it dull, but prices of good Irons are firmly maintained. There has been a good deal of inquiry for Iron, but the unwillingness to pay an advance and the somewhat larger offerings of outside brands have caused buyers to hesitate before deciding on their course of action. Ordinarily this would indicate weakness, but as the entire current output is being steadily absorbed, the result is likely enough to be just the reverse of what buyers expect. Reports from other districts are all of a favorable character, and as consumers' requirements around here are known to be heavy it is difficult to see why lower prices should be looked for. There are Irons to be had at low figures, such as \$14.50 @ \$14.75 for Gray Forge and \$16.50 for No. 1 Foundry, but they are not what consumers want, and to get what they want full quoted prices will have to be paid, say \$15 @ \$15.50 and \$17.50 @ \$18, delivered, for Gray Forge or No. 1. Such qualities as are included in the last-mentioned prices are by no means plentiful, and if (as seems not improbable in the near future) buyers are all forced into the market together they will not hesitate very long at figures which they now consider a little too high. As a matter of fact everything depends on the demand during the next 30 days, and as this can be fairly estimated by current and prospective consumption, it seems safe to say that prices are not likely to be lower. All departments of the Iron trade are fuller of orders than they have been for years, and, as we have already said, there is an immense amount of work to come

out during the fall months, so that with the present furnace output there is not going to be much Iron to pile up. Some of the Western furnaces have instructed their agents to advance prices 50¢ per ton; others have withdrawn entirely, so that local furnaces are gradually getting the market into their own hands again. For these and other reasons which might be given the chances are that the dullness which some people are a little frightened at will soon give way to increased activity and possibly to somewhat higher prices, although low-priced Iron can be had if any one wants it at about the figures already mentioned. Good Irons, however, are very firm at from \$15 to \$15.50, delivered, for Gray Forge, \$16 to \$17 for No. 2, and \$17.50 to \$18 for No. 1.

Blooms.—The market is firm, with something of an upward tendency, although it is no easy matter to get exact quotations, as so many mills are sold up. Moderate-sized orders, however, could be placed at about the following quotations, say \$29 @ \$29.50, delivered, for Nail Slabs; \$30 @ \$31 for Tank Slabs; \$32.50 @ \$33.50 for Shell Slabs; \$36 @ \$37 for Flange, and \$38 @ \$40 for Fire-Box; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite, \$41.50 @ \$42.50; Scrap Blooms, \$32 @ \$33 per "Bloom" ton of 2464 lb.

Muck-Bars.—The market has been a little unsettled during the week, and in some cases prices were a shade lower, but the turn seems to be in the other direction again, and good judges say prices are going higher. Orders could be placed to-day at from \$28.25 to \$28.50, at mill, or \$28.75 @ \$29, delivered, although some quote \$30 firm.

Bar-Iron.—There is not much of interest to note in this department. Mills are all full of work, and as a rule are firm at from 1.85¢ to 1.90¢ for Best Refined Iron. A large amount of business is on the market from car-builders, but it is difficult to find out what sort of prices are being paid, or more strictly speaking, to find out what kind of an article they get for the money. In one case 1.72½¢, in another 1.75¢, is mentioned delivered at works; and although quality is claimed to be satisfactory, it is nevertheless an open question what that means. This Iron comes from Ohio, and so far as we can find, no first-class Pennsylvania material can be had at less than 1.80¢, and in most cases still higher figures are asked. The general feeling at the moment is that still higher figures will be reached in the near future, so that there is no great pressure to sell, even at to-day's prices. Cost of production is steadily increasing, and as there is plenty of business manufacturers are not likely to throw away their opportunities. Skelp is held at higher prices, say 1.85¢ @ 1.90¢ for Grooved, and from 2.10¢ to 2.25¢ for Sheared, according to requirements as to size, &c.

Plates.—The demand is very satisfactory and mills are all in first-class condition as regards orders. Nothing specially important has been on the market during the past few days, but there is a good general demand and so much important work in prospect that manufacturers feel perfectly comfortable. Prices are firm, and in most cases sales have been at the following figures, say: 2.1¢ @ 2.2¢, delivered, for Ordinary Plates and Tank Plates; 2.10¢ @ 2.25¢ for Universal Plates; Shell, 2.4¢ @ 2.5¢; Flange, 3.25¢; Fire-Box, 3.7¢ @ 4¢; Steel Plates, Tank and Ship Plate, 2.2¢ @ 2.30¢; Shell, 2.5¢ @ 2.7¢; Flange, 2.4¢ @ 3¢; Fire-Box, 3½¢ @ 4¢.

Structural Material.—There is nothing but activity to report as regards all kinds of shaped Iron. Prices are very firm, with some probability of an advance in

Beams and Channels at an early date. Angles are also very firm, and the chances are somewhat favorable for a higher range of quotations along the entire line. For the present we quote as follows: Bridge Plate, 2.10¢ @ 2.15¢; Angles, 2.10¢ @ 2.20¢; Tees, 2.6¢ @ 2.7¢; Beams and Channels, 2.8¢ for Iron or Steel, all delivered at Philadelphia or its equivalent.

Sheet-Iron.—The market is both active and firm, but as yet no quotable change in prices can be made. The advance in cost of production is becoming important, and it is believed that a general advance in prices is only a question of time. Sales chiefly at prices as follows:

Best Refined, Nos. 14 to 20.....	3¢
Best Refined, Nos. 21 to 24.....	3.20¢
Best Refined, Nos. 25 to 26.....	3.40¢
Best Refined, No. 27.....	3.50¢
Best Refined No. 28.....	3.60¢
Common, $\frac{1}{4}$ ¢ less than the above.	
Best Soft Steel, Nos. 14 to 20.....	3 $\frac{1}{4}$ ¢
Best Soft Steel, Nos. 21 to 24.....	3 $\frac{1}{2}$ ¢
Best Soft Steel, Nos. 25 to 26.....	3 $\frac{3}{4}$ ¢
Best Soft Steel, No. 27.....	4¢
Best Bloom Sheets, $\frac{1}{4}$ ¢ extra over the above prices.	
Best Bloom, Galvanized, discount.....	.65 ¢
Common, discount.....	.67 $\frac{1}{4}$ ¢

Steel Rails.—The market shows no change of any importance. Sales of small lots for prompt delivery are being made at about \$28.50 at mill, but for winter work \$28, and possibly a fraction less, might be accepted for a desirable class of orders. Mills are full of work for the present, with fair prospects of its continuance during the balance of the year.

Old Rails.—The market is very limited, and prices hardly worth quoting. Sales delivered at mills have been made at from \$24 to \$24.50, and \$23.75 would be paid in Philadelphia, but the few here are held at very much higher figures, so that the owners are not offering them at present.

Scrap-Iron.—Market dull, but good selections command last week's prices as follows: \$20.50 @ \$21.50 for cargo lots; \$21 @ \$21.50 for carload lots, delivered, or for choice, \$22; No. 2 do., \$14 @ \$15; Turnings, \$14 @ \$15; Old Steel Rails, \$16.50 @ \$17.50; Cast Scrap, \$15 @ \$16; do. Borings \$9 @ \$10; Old Fish-Plates, \$23 @ \$24; Old Car-Wheels, nominal, \$17 @ \$18, Philadelphia.

Wrought-Iron Pipe.—The demand is very heavy, so that there is no difficulty in maintaining prices. Prospects are encouraging to sellers, as mills are full of work for weeks to come. Discounts quoted as follows: Butt-Welded Black, 50 %; Lap-Welded Black, 62 $\frac{1}{2}$ %; Butt-Welded Galvanized, 42 $\frac{1}{2}$ %; Lap-Welded Galvanized, 50 %; Boiler-Tubes, 52 $\frac{1}{2}$ % @ 57 $\frac{1}{2}$ %, according to size. A meeting of the association was held to-day, at which prices were reaffirmed.

Nails.—There is a better feeling in Nails, and prices are now tolerably uniform at about \$1.90 for carload lots and \$2 for lots from store. Once in a while \$1.80 @ \$1.85 is mentioned for spot cash, but a fair quotation would be as above, \$1.90 for carload lots.

Edwin R. Mann and Frank Samuel have associated themselves at Philadelphia under the firm name of E. R. Mann & Co., for the sale of Steel, Iron and Iron Ores, with their office located at 147 South Fourth street. Mr. Mann was for many years with Naylor & Co., but has been in business at the address just given for several years past. Mr. Samuel was vice-president of the North Branch Steel Company. These gentlemen have, therefore, both had much experience in the line in which they are now engaged, and are prepared to satisfactorily transact any business that may be intrusted to them.

Cleveland.

CLEVELAND, August 12, 1889.

Iron Ore.—The market is still very active and prices are firm. The sales for the past week have included several 2000 and 3000 ton lots of non-Bessemer at \$3.75 @ \$4; a number of small blocks of Republic and other high grade Bessemer at \$5.75; several orders of Menominee and Gogebic Bessemer at \$4.75 @ \$5, and not a little Bessemer Hematite Ore at \$5. Additional vessels are being pressed into service, and the Ore is coming down to the lower lake harbors at a tremendous rate. Last week's receipts exceeded 225,000 tons, bringing the total shipments to date up to nearly 3,550,000 tons. The output of a number of the mines has been entirely sold up, and dealers find it necessary occasionally to decline to book orders for lots exceeding 2000 or 3000 tons in amount. There are, however, desirable lots of Ore to be obtained, although mine-owners do not seem anxious to force sales.

Pig-Iron.—The market is steadily improving in every way. The demand for Iron to be delivered several months hence is heavy and prices are slowly but surely growing more in favor of the sellers. The 50¢ advance in all of the favorite Irons is steadfastly adhered to. Gray Forge and Mill Irons are still prime favorites. The orders placed during the past two or three weeks for both Red Short and Neutral Mill Irons from the Mahoning and Shenango valleys will keep the works engaged for several months. Bessemer Iron at \$17 @ \$17.50 is selling freely, and there is evidently a corresponding depression in the inquiry for Southern Iron.

Manufactured Iron.—The market is firm in every way, and 1.70¢ for Common Bars from store is readily obtained. Sheets are increasing in scarcity and advancing in price.

Scrap-Iron.—The inquiry for Old American Rails has forced prices up to \$23 @ \$23.50, and at these quotations they are selling freely. Old Wheels are not much desired at \$17, but there is an excellent demand for selected Axles at \$25 @ \$25.50.

Pittsburgh.

Office of The Iron Age, 77 Fourth Ave. {
PITTSBURGH, August 13, 1889. }

The general Iron and Steel market is firmer than it was a week ago, caused in large part by the settlement of the Coke strike, which has added to the cost of Coke, and furnace men are asking an advance on Pig-Iron sufficient to cover the enhanced cost of production. Brokers who have been out in the Shenango and Mahoning valleys during the past week, report that furnace men out there have their ideas up considerably and that many of them are already sold from 30 to 90 days ahead. It is expected that there will be an advance in freight rates on the 1st of September, which, like the Coke strike, will not be without its effect in increasing cost of production. River navigation has been suspended for the first time this year and the railroads will now have more than they can do, especially those whose lines extend south and westward, and they will now have a good opportunity to shove up rates. There is to be a great water-way convention at Cincinnati next month, at which the matter of river improvement will come up for consideration. Pittsburgh is very much interested in this matter, especially our manufacturers, who are large shippers and to whom transportation in these days of active competition and small margins is a matter of vital importance, as upon it very often hinges whether business is to be placed here or elsewhere.

Pig-Iron.—The market continues strong and somewhat excited, caused by the enhanced cost of Coke, and within the past day or two sales have been made at a further advance of 25¢ @ 50¢ per ton, and the indications at the present writing are that there will be a further advance. Brokers report that it is exceedingly difficult to find furnace men willing to sell, that already the great majority of them are pretty well sold ahead, and as they expect still higher prices it is not strange that they are refusing to make additional contracts. There has been an exceedingly large business done in this district during the past few weeks, by which we mean, in addition to Pittsburgh, the Mahoning and Shenango valleys, and it is well enough to bear in mind that while a good many furnace men are sold ahead from one to three months, a corresponding number of consumers has anticipated future wants to that extent. While the market is all right at present, some of the more conservative operators are apprehensive that the present movement will be overdone; however, we do not think there is much danger of this, as the business is perfectly legitimate, as yet being confined to the producer on the one hand and the consumer on the other. We quote prices as follows:

Gray Forge Neutral.....	\$14.50 @ \$15.00, cast
All-Ore Mill.....	15.00 @ 16.00, "
White and Mottled.....	13.00 @ 14.00, "
No. 1 Foundry.....	16.00 @ 16.50, "
No. 2 Foundry.....	15.00 @ 15.50, "
No. 3 Foundry.....	14.50 @ 14.75, "
No. 2 Charcoal Foundry.....	21.00 @ 21.50, "
Cold Blast Charcoal.....	24.00 @ 27.00, "
Bessemer Iron.....	17.00 @ 17.25, "

There was a sale of 5000 tons of Bessemer to be delivered at the rate of 1000 tons per month at \$17, cash, and it is doubtful whether the order could now be duplicated under \$17.25. We are also advised of a sale of 1000 tons of Gray Forge at \$15, cash, which is an advance of a full dollar here within a few weeks.

Muck-Bar—Is also stronger in sympathy with Pig-Iron and we now quote at \$27.50 @ \$28, cash, and as it now stands there are but few sellers, even at the outside figure. It is probable that prices will go above those quoted within the next day. We are cognizant of a direct offer of \$28, cash, which was declined.

Spiegel—Is firmer and may be quoted \$30 @ \$30.50 for 20 %. Ferromanganese is also tending upward and is now quoted at \$61 @ \$62 for 80 %.

Manufactured Iron.—The market for all kinds of Finished Iron is firm, owing to the enhanced cost of the raw materials, and the indications are that the prices now quoted will be advanced before the close of the week, and manufacturers are refusing to contract for future delivery except with the understanding that they are to receive market prices at the time of delivery, whatever they may be. Bars are quoted 1.70¢ @ 1.80¢; Plates, 2.15¢ @ 2.20¢, and No. 24 Sheet 2.70¢ @ 2.80¢, all 60 days, 2 % off for cash. Skelp Iron continues in active demand and prices continue to tend upward; nearly all the mills making a specialty of the same are oversold, and it is difficult to place an order just at present. We now quote Grooved at 1.75¢ @ 1.80¢, and Sheared at 2.05¢ @ 2.10¢.

Nails.—The Nail market is firmer but in an unsettled and unsatisfactory condition. There is no association, and with no organization there is no co-operation. Organization and co-operation are of vital importance, and they should be secured at once. It is admitted on all hands that prices will have to be advanced in view of the enhanced cost of production, but how it is to be brought about is the question that is troubling Nail manufacturers at present. While our Pittsburgh manufacturers continue to sell in a small way at

\$1.90, 60 days, 2 % off for cash, they would not contract for large lots at the price quoted. Wire Nails are quoted at \$2.25, card rate, but it is still alleged that the card rates are being cut.

Wrought-Iron Pipe.—Never in the history of the Wrought-Iron Pipe trade has there been such a demand for Pipe as at present. Some very large contracts have been placed during the past week, and the mills are nearly all oversold. At the regular monthly meeting of the association in Philadelphia to-day prices were reaffirmed.

Old Rails.—The Old Iron Rail market is firmer, and with continued low offerings and considerable inquiry prices are still tending upward. We now quote at \$24.50 @ \$25, with a sale of 400 tons reported at \$24.50 here. Old Steel Rails are also strong, with an increasing demand. We quote \$18.50 @ \$19 for short and \$20 @ \$21 for long lengths.

Steel Rails.—Heavy Sections are quoted at \$28 @ \$28.50, cash, for late fall or winter delivery. Both of the mills here have all the business booked they can attend to for the next three months, and are not in the market for near-by delivery contracts.

Billets, Blooms, &c.—There is continued inquiry for Bessemer Steel Blooms and Billets, and as the mills are all oversold it is difficult to get an order placed for either present or near-by delivery. Prices are still tending upward, and we now quote at \$28 @ \$29, according to size, quality, delivery, &c. Nail Slabs may be quoted at \$28 @ \$28.50. Rail Crops, in the absence of sales, may be quoted at \$19 @ \$19.50, and Bloom Ends at \$18.50 @ \$19.

Railway-Track Supplies.—There is an increased demand for almost everything in this line, and prices are firmer and pretty sure to go higher. Spikes are still quoted at 2¢, 30 days, on cars at works; Splice Bars, 1.75¢ @ 1.80¢, and Track Bolts at 2.75¢ @ 2.85¢ with square and hexagon nuts.

Old Material.—There is an increased demand for all kinds of Old Material and the market is decidedly stronger. No. 1 Railway-Shop Scrap may be quoted at \$20 @ \$21, net ton. No sales as yet reported above \$20. Old Car-Axles, \$24 @ \$25; Wrought Turnings, \$13 @ \$14; Cast Scrap, \$15, gross; Old Car-Wheels, \$18 @ \$18.50, gross; Cast Borings, \$12 @ \$12.50.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts.,
CINCINNATI, August 12, 1889.

The volume of business in Pig-Iron has increased but little during the past week, but nothing has occurred to weaken the confident feeling prevailing. On the contrary, the new developments have tended to strengthen the market. Most of the large Southern companies are oversold, some of them to a great extent. The Tennessee Company, it is said, have orders for 96,000 tons from June 1 for delivery during the year. These large contracts have placed many furnaces practically out of the market, leaving the field for Northern Iron, which has been going into consumption more rapidly and has gradually strengthened. It is reported that there are large orders upon the market for Foundry grades, but holders show no disposition to meet the views of buyers. A few furnaces which have been holding out, and would take no orders beyond October now announce they are ready to assume contracts for delivery during the entire year at current rates, but the majority of producers have not relaxed ideas for short deliveries, except at a material advance. The Coke strike, it is argued,

will result in greater strength for Pig-Iron. The inquiry for Foundry Iron has been active, but has not resulted in large sales; 600 tons No. 2 Southern Coke sold at \$14.50, cash. Gray Forge has continued to sell well, but mainly in moderate amounts at quotations. About 3000 tons Virginia sold at \$13.75, cash. But the call for Car-Wheel Iron has been of special significance; 2300 tons Southern sold at \$23.50, cash. Lake Superior Iron has sold in moderate amounts at 25¢ advance. Lowmoor Iron has sold at \$16.50; 1200 tons Silvery Gray sold at \$14.50 @ \$14.75, cash, Cincinnati. The following are approximate prices current here at the close for cash, f.o.b.:

Foundry.		
Southern Coke, No. 1	\$15.25 @	\$15.50
Southern Coke, No. 2	14.50 @	14.75
Southern Coke, No. 3	13.75 @	14.00
Ohio Soft Stone Coal, No. 1	16.00 @	16.50
Ohio Soft Stone Coal, No. 2	15.00 @	15.50
Maboning and Shenango Valley	16.00 @	16.50
Hanging Rock Charcoal, No. 1	20.00 @	22.00
Hanging Rock Charcoal, No. 2	19.00 @	21.50
Tennessee and Alabama Charcoal, No. 1	17.50 @	18.50
Tennessee and Alabama Charcoal, No. 2	16.50 @	17.50
Forge.		
Gray Forge	13.25 @	13.50
Mottled Neutral Coke	12.50 @	12.75
Cold Short		13.00
Car-Wheel and Malleable Irons.		
Southern Car-Wheel	23.00 @	24.00
Hanging Rock, Cold Blast	22.00 @	25.00
Lake Superior Car-Wheel and Malleable	20.00 @	20.50

Manufactured Iron.—A stronger feeling has prevailed, and some mills have advanced Bar-Iron 10¢ @ 100 lb, with a fair number of orders ahead and an improved demand.

Old Material.—Old Rails have continued in fair demand and ruled firmer, with further sales at \$23, cash, early in the week, but are offered at \$22.50 at the close. Old Wheels, however, have been quiet, and are quotable at \$18, cash, here.

Nails.—Have been in good demand, and the market has ruled firm at previous prices. Iron and Steel Nails, 12d to 40d, sell at \$1.85 @ \$1.90 @ keg, with 10¢ rebate in carload lots, at the mills. Steel Wire Nails sell at \$2.40 for 60d.

Detroit.

WILLIAM F. JARVIS & Co., under date of August 12, 1889, say: The Iron trade have generally awakened to the fact that the lowest prices for nearly all grades of Iron have been reached. Southern grades have already been advanced and the advance rigidly maintained. The Ohio and Pennsylvania furnaces have a stronger market and in some cases have also made advances. The Lake Superior Charcoal market is stronger to-day than it has been at all this year. We have ascertained that at most points manufacturers are doing as large a volume of business now as at any previous time, if not larger. To be sure, they complain somewhat of prices, but are sanguine that these will soon improve. They have been calling largely for Iron, and particularly for Lake Superior. This grade shows a notable shortage in supply, and it looks as if some advances must occur in the very near future. Railroads are making inquiries for equipment, particularly the Western roads, who will have to carry a large portion of the crops from the West to the seaboard during the balance of the present year. A very much more hopeful view of the outlook prevails at nearly all points. The market quotations to-day are as follows:

Lake Superior Charcoal, all numbers	\$19.00 @	\$19.50
Lake Superior Coke, all ore	18.00 @	18.50
Lake Superior Coke, cinder mixed	17.50 @	18.00
Standard Ohio Black Band	17.50 @	18.50
Southern No. 1	16.50 @	17.00
Southern Gray Forge	15.00 @	15.50
Southern Silvery	16.00 @	16.50
Jackson County (Ohio) Silvery	18.00 @	18.50
Old Wheels	18.00 @	19.00

New York.

Office of *The Iron Age*, 65 and 68 Duane street,
NEW YORK, August 14, 1889.

The condition of the local Iron trade during the past week can readily be summed up in a very few words. Prices are firmly maintained at recent advances, and there appears to be no indication of a reaction in the immediate future, but for a short time business has been somewhat quiet. It is expected that a resumption of activity will be felt before the close of the month, as a number of circumstances have transpired which give color to this belief.

Pig-Iron.—The only sales which have occurred in this market, so far as we can ascertain, have been small quantities of Southern Irons, which seem to be available now to a limited extent. No pressure is exerted on the market in this direction, however, and prices are firmly maintained. At the same time also those who have contracts for future delivery are asking the manufacturers to anticipate as much as possible, showing that the consumption of Iron is in excess of their expectations. Manufacturers are making very heavy deliveries of Iron, and with the demand pressing upon them from their regular trade they are inclined to think that an early resumption of buying is inevitable. The pressure for standard brands of Foundry Irons of approved quality is much greater than the general demand for Iron of all kinds. One of the leading furnaces in this locality reports that it has recently refused orders amounting to 4000 or 5000 tons. Quotations are about as follows: No. 1 Anthracite Foundry, at tide-water, \$17 @ \$18; No. 2, \$16 @ \$17; Gray Forge, \$15.25 @ \$15.75; Southern No. 1 Coke Foundry, delivered at New York, \$16.75 @ \$17.25; No. 2, \$16 @ \$16.50; No. 3, 15.25 @ \$15.75; Gray Forge, \$15.

Scotch Pig.—Freights are still rising, prices are higher on the other side of the Atlantic, and quotations here have consequently been advanced, but there is absolutely nothing doing in this market in this line, as the quotations now made are prohibitory, as follows: Eglinton, \$20; Dalmellington, \$20.50; Langloan, \$22 @ \$22.50; Shotts, \$21.50 @ \$22; Coltness and Summerlee, \$22.50.

Spiegeleisen.—The large sales reported during the past couple of weeks seem to have satisfied heavy buyers for the present, but there are still inquiries in the market for small quantities, and prices are quoted firm at a slight advance. Importers now quote 20 % at \$29.50 @ \$30; 30 %, \$34.50 @ \$34.75, and 80 % Ferro, \$60 @ \$61.

Wire Rods.—Foreign makers of Rods have advanced their quotations considerably, and the lowest price now reported is \$46, ex-ship, New York. Of course this completely puts an end to foreign business for the time being, except on special qualities of Rods, for which buyers are compelled to pay an advance of \$4 @ ton over old quotations. Numerous inquiries are being received for domestic Rods and Eastern consumers are negotiating for large quantities with Western mills. The situation has recently been somewhat complicated by the breaking down of a Western Rod mill which had secured orders from consumers for considerable quantities of Rods, and now finds itself not only unable to deliver the Rods, but obliged to enter the market as a buyer for its own Wire-mill. Domestic Rods are quoted at \$41, at mill, which makes them cost about \$43 at Eastern Wire-mills.

Steel Billets.—Material of this character is not to be had to any extent for this month's delivery. The mills are all well sold up, and in some cases have been able to get \$2 per ton advance over former prices. Eastern works are quoting 4-inch

Wire Billets at \$29 @ \$30 at works for such deliveries as they are able to meet. They are receiving inquiries from consumers who do not usually purchase in this market.

Finished Iron and Steel.—A steady business is now in progress with no unusually heavy orders in the market, yet with some concerns reporting quite an active condition of trade in consequence of the accumulation of small orders. The Pittsburgh and Youngstown mills continue to take much of the business in Bar-Iron originating in this vicinity. Quotations are as follows for delivery on dock: Sheared Plates, 2.15¢ @ 2.20¢; Universal Mill Plates, 2.20¢ @ 2.25¢; Angles, 2.15¢ @ 2.20¢; Tees, 2.5¢ @ 2.6¢; Beams and Channels, 2.8¢. Tank Iron, 2.15¢ @ 2.20¢; Shell, 2.4¢ @ 2.5¢; Steel Tank, 2.3¢; Shell, 2.5¢; Flange, 2.75¢ @ 2.8¢; Fire-Box, 3.25¢ @ 4¢; Common Bar-Iron, 1.6¢ @ 1.65¢; Medium, 1.7¢; Refined, 1.8¢ @ 2¢.

Merchant Steel.—The month of August has not turned out quite as well as did the month of July, yet some houses report a very good condition of trade, with business gradually increasing. It is expected that as the month advances the volume of trade will be entirely satisfactory. Reports are current that efforts are to be made to revive the associations which formerly existed and which controlled the prices of Merchant Steel, but serious doubts are expressed by leading dealers in this locality as to the success of the movement. Some of the Eastern manufacturers are known to be hostile to any attempt to revive the old organizations, while it is believed that one prominent Western Steel manufacturer can by no means be persuaded to unite with his colleagues in the trade. Quotations are unchanged, as follows: Tool Steel, good brands, in large lots, 7¢ @ 7½; specials, 12¢ @ 35¢; Crucible Spring, 3½¢ @ 4¢; good Open-Hearth Machinery, 2.30¢ @ 2½¢; Bessemer ditto, 2¢ @ 2½¢; Open Hearth Spring, 2½¢ @ 2¾¢; Tire 2.15¢; Toe-Calk, 2½¢; Sheet, 6½¢, 8¢ and 10¢.

Steel Rails.—The business of the week amounted to some 8000 to 10,000 tons, consisting of small lots. Several contracts are under negotiation and will probably be completed some time this week, involving the sale of a considerable quantity of Rails in addition to the above. Inquiries now in the market indicate a material increase in business in the near future. Some of the inquiries are made for next year, but thus far the mills report that they have refused to entertain propositions for such deliveries. The Rail trade now begins to show an improvement on last year, having passed the critical point. We are informed that over 100,000 tons of Rails have been sold and delivered in excess of last year up to this time. Quotations are still firm at \$28, at mill.

Track Supplies.—The manufacturers of supplies from Iron are endeavoring to work up prices, alleging that with the advance in Old Rails and other old material it is impossible for them to continue to sell at present prices, yet some of them are still so anxious for business that during the past week they have named lower prices than ever for Iron Fish-Plates delivered at distant points. Quotations are as follows: Iron Fish-Plates, 1.80¢ @ 1.90¢ at mill; Steel Fish-Plates, 1.70¢ @ 1.80¢; Square-Nut Bolts, 2.70¢ @ 2.75¢; Hexagon-Nut Bolts, 2.90¢ @ 3¢; Spikes, 2¢ asked.

Old Material.—A good demand exists for Old Iron Rails, but only small lots have been sold during the past week. They brought a shade under \$23 on cars, Jersey City. A large consumer offered \$22.50 for a round lot of Americans here,

which was refused by the holders. Foreign Rails in store are held far above the market, \$25 being now asked for them. Sales of Old Steel Rails have been made in the interior at \$18.50, but they are quoted at \$19 @ \$20. No. 1 Wrought Scrap is in good demand at \$21, Jersey City.

Messrs. Warren, Wood & Co., dealers in Pig-Iron at 150 Broadway, New York, have issued a little pamphlet containing valuable statistical information on the production and consumption of Pig-Iron in the United States, the unsold stocks at different dates, monthly prices of Pig-Iron from 1860, and lowest and highest prices of Scotch Pig-Iron in the New York market from 1825 to the present time. A great deal of valuable information is compressed within very small compass in this pamphlet.

Financial.

Advices bearing on the business situation are almost uniformly more cheerful, the volume of current transactions being very fair for the season and increasing, while prospects brighten from day to day. The foundation fact to which attention is directed is the substantial gain to trade and transportation interests in all directions promised by ripening crops. The August crop report of the Department of Agriculture makes the condition of cotton 89.3, an advance of nearly two points during the month. Since 1880 this average has been exceeded but three times—in 1882, 1885 and 1887. According to the same authority the condition of corn is 94.8; spring wheat, 81.2; spring rye, 95.4; oats, 92.3; barley, 90.6; buckwheat, 95.2; potatoes, 94.3; hay, 94.5; tobacco, 84.4. Corn has not stood more than one point higher during the past nine years, and the present return has been equaled but three times during that period. Spring Wheat has suffered a falling off during the month amounting to nearly 3 points. Excepting the years 1887 and 1886 it is the lowest since the very small crop of 1881. Dakota is now the largest spring wheat State, and the very low condition there reduces the general average. The quality of the crop will be better than usual. In Minnesota an excellent feeling prevails, a large crop being already mainly harvested. In the New York market 1400 sacks of new crop Minnesota were sold for shipment through to London, the first of the season. Wheat is stronger on a less favorable interpretation of the Government exhibit. Corn is easier, with increased offerings and renewed activity for export. Spot coffee was ½¢ higher. Refined sugars are ½¢ lower and depressed; raw nominal. Dry goods jobbers report that trade is starting up through the country, though the general demand is rather slow. An event that created surprise was the attachment made by A. D. Juilliard & Co. upon the Riverside and Oswego Woolen Mills, for which they are agents, to secure an advance of \$400,000.

Stock Exchange markets have been spiritless. Influenced by lower markets in London, by a heavy failure in the woolen trade and by more trouble among the Western roads, the market on Thursday was dull but strong. On Friday business was limited, but the coalers were in demand on account of the promised advance in prices, and there was a rise in Chesapeake and Ohio and Northern Pacific. On the other hand, there was a drop in Sugar Trust, which sold off in anticipation of Judge Ingraham's order restraining the Sugar Refineries Company from paying further dividends. The trusts continued to be weak spots for days following. With this exception, the tone on Monday was

stronger, assisted by London buying. The heaviest foreign buying was in Wabash preferred. Charges filed against the Chicago and Alton are expected to bring out damaging testimony in rebuttal. On Tuesday there was quite a sharp reaction. The greatest decline was in the Chicago and Eastern Illinois shares. The Wabashes continued to attract the most general attention. Sugar Trust was active and exceedingly irregular, declining at one time to the lowest price of Monday, on the news that the court had taken the papers in the suit against the trust, reserving decision until early in September. The Northern Pacific proposes a grand financial scheme—viz., to issue a blanket mortgage for \$160,000,000, which will provide for the old loans as they become due and for all needs for a period of years.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered.....	105½
U. S. 4½s, 1891, coupon.....	106½
U. S. 4s, 1907, registered.....	128
U. S. 4s, 1907, coupon.....	128
U. S. currency 6s.....	118

The weekly bank statement showed a decrease of \$1,423,000 in surplus reserve, which now stands at \$6,793,125. Loans were expanded \$1,521,200. Deposits decreased \$1,988,200. The currency movement to and from the interior had no material effect. Money is decidedly stronger, considerable amounts having been placed at 6%, and the expectation is that funds can be profitably used for the remainder of the season. Owing to recent failures paper offered for discount is closely scrutinized, but it is remarked that collections thus far have been good, with remarkably few bad accounts. Exports of specie for the week amounted to \$612,550. No further shipments are in prospect. The Bank of England rate was advanced to 3%, and the Bank of France made a like advance. Leading drawers of exchange reduced their posted rates to \$4.85½ @ \$4.88. The market is dull. The aggregate clearings of 43 cities for the past week show an increase of 7½% over the corresponding week in 1888; outside New York the increase was 7¾%. The East-bound tonnage from Chicago aggregated 53,524 tons, against 40,138 the corresponding week of last year. The receipts of grain at Chicago last week aggregated 5,000,000 bushels, against an aggregate last year for the same week of 2,400,000 bushels. Railroad earnings were encouraging. The ratio of improvement over the same month of last year is 8.34%, while the increase in mileage is only 4.36%. Out of 129 roads there are only 29 which report diminished earnings, and most of these decreases are small in amount.

The foreign commerce of New York for July shows an unexpected gain in imports, the total valuation being \$46,746,616, which is upward of \$7,000,000 in excess of the corresponding total of last year and several millions in excess of any July in previous years. Sugar to the value of \$7,000,000 or \$8,000,000 is included. For seven months only the year 1880 stands ahead. The exports for July, on the other hand, exclusive of specie, were considerably below the July exports for either of the three years preceding 1887, and in view of the large imports are not especially encouraging.

The total value of the mineral oils exported from this country during July was \$4,607,906, against \$4,143,042 in July, 1888. The figures for the first seven months of the calendar year are 356,653,785 gallons, valued at \$28,187,483, while those for 1888 are 299,950,686 gallons, valued at \$25,872,554. The cotton exports of July reached a total of 28,421,881 lb, of the value of \$2,946,310, against 53,419,602 lb, of a value of \$5,447,016, in July, 1888. The total values for the 11 months ending July 31 were \$231,520,-

204 in 1889 and \$219,849,722 in 1888. The value of all the breadstuffs exported during July is \$9,806,950, against a total for July, 1888, of \$7,904,452. The exports for the seven months of the calendar year foot up for 1889 \$67,036,559, and for 1888 \$58,396,398. The greatest gain for July, 1889, over the corresponding month of 1888 is in corn.

The report of the assessors of Boston shows the valuation of the city to be \$795,416,800, an increase of \$30,797,100.

Metal Market.

Copper.—Spot Copper improved for the week from £43, as it stood in London on Wednesday of last week, to £43. 15/ last night, and futures from £42 to £42. 10/. Sales 600 tons. The import of American Copper into Liverpool and Swansea during the first seven months has been 15,276 tons Fine, against 16,530 tons in 1888 and 6010 in 1887. Messrs. James Lewis & Son, Liverpool, express themselves to the following effect in their monthly circular of August 1: "English Best-Selected Copper is 10/ and Furnace Material 3d $\frac{1}{2}$ unit, or £1. 5/ $\frac{1}{2}$ ton of Copper, lower on the month, while Good Merchantable is 15/ $\frac{1}{2}$ ton higher, in consequence of the scarcity of warrants, 3376 tons of this class of Copper having been delivered in excess of arrivals. The recent largesales of Furnace Material have satisfied the immediate requirements of smelters, and they now show much less inclination to make purchases except at a reduction in price. Arrivals from all countries, except Chili, have been large—8480 tons, and they promise to be large during the coming month. As nearly all of these have been sold before arrival, the deliveries have also been large—13,199 tons—filling up the vacuum caused by the low ebb to which the stocks of smelters, manufacturers and consumers had been reduced during the continuance of the high prices resulting from the operations of the French syndicate." The still unsettled condition of our own market causes consumers to proceed in their operations with the utmost caution and to refrain from anticipating requirements, Lake remaining nominally 12¢ to dealers direct, 12 $\frac{1}{2}$ ¢ @ 12 $\frac{1}{2}$ ¢ jobbing, and casting brands 10 $\frac{1}{2}$ ¢ @ 10 $\frac{1}{2}$ ¢. On the Exchange to-day 11.75¢ was bid.

Tin.—Since our last week's report spot Straits advanced in London from £88. 15/ to £90. 17/6 and futures from £89. 7/6 to £91. 10/ last night, sales summing up in the interval 750 tons. Prices have gradually been hardening here in sympathy with the improving tendency in Europe, so that 25 tons prompt shipment were taken last night at 20.30¢, spot being quoted 20.40¢, and November 20.20¢. Spot closes this forenoon at 20 $\frac{1}{2}$ ¢ @ 20 $\frac{1}{2}$ ¢. Messrs. DeMonchy & Havelaar, Rotterdam, July 31, write as follows: "The next bi-monthly sale will be held toward the end of September, but meanwhile the balance of the refined Banca left in warehouse, being 9447 Slabs, will be offered for sale on Thursday, August 15." **Tin-Plates.**—The English market is 3d $\frac{1}{2}$ box higher, and here there is greater strength, but only a moderate amount of activity. As the exceptionally rainy weather this summer on the Atlantic Coast has curtailed the fruit and vegetable crops, packers do not expect to use more than 50% of the usual amount of Plate. England shipped to this country, first six months, 179,501 tons, against 140,425 last year and 135,310 in 1887; to all quarters, 224,473, against 188,179 and 176,138. We quote large lines, ordinary brands, $\frac{1}{2}$ box: Siemens-Martin Steel, Charcoal finish, \$4.75 @ \$5.50; Coke finish, \$4.60 @ \$4.65; Terns, \$4.12 @ \$4.30; Coke Tins, \$4.22 $\frac{1}{2}$ @ \$4.32 $\frac{1}{2}$, and Wasters \$4.05 @ \$4.10.

Lead.—Some 500 tons Common Domestic were taken in the open market at from

3.85¢ down to 3.75¢, but toward the close there is greater firmness, 3.80¢ being offered, but none to be had for less than 3.85¢. St. Louis 3.75¢ and Chicago 3.80¢.

Spelter.—About 1000 tons of Ore have again been shipped from Southwestern Missouri and Kansas to England, via Baltimore, at a higher freight, instead of via Galveston, for the sake of quick dispatch. The market here is not very active, but no prime Western can be had under 5.15¢. Silesian, being £21 in Europe, must be quoted 6 $\frac{1}{2}$ ¢.

Antimony.—There continues to be a very good demand at 18¢ @ 18 $\frac{1}{2}$ ¢ for Cookson's and 16 $\frac{1}{2}$ ¢ @ 16 $\frac{1}{2}$ ¢ for Hallett's. The stock is meanwhile merely nominal.

New York Metal Exchange

The following sales are reported:

THURSDAY, August 8.	
10 tons Tin, September.....	19.90¢
FRIDAY, August 9.	
16 tons Lead, October.....	3.90¢
32 tons Lead, November.....	3.92 $\frac{1}{2}$ ¢
10 tons Tin, September.....	19.95¢
MONDAY, August 12.	
25 tons Tin, September.....	20.25¢
WEDNESDAY, August 14.	
10 tons Tin, October.....	20.45¢

The Quicksilver Trade.

Receipts at San Francisco during the half-year have been very light as compared with those of the corresponding period in either 1887 or 1888, as appears from the following:

	Flasks.
1889.....	8,344
1888.....	11,143
1887.....	11,636

Exports have been as follows:

	Flasks.	Value.
Mexico.....	2,402	\$100,164
New York.....	430	18,000
New Zealand.....	55	2,380
Central America.....	28	1,319
Australia.....	10	425
British Columbia.....	10	425
Total, six months 1889.....	2,935	\$122,713
Six months 1888.....	7,726	308,055
Six months 1887.....	5,877	227,769

The fluctuations in the market have been just the reverse of 1888. The market opened at \$42, \$6 lower than a year previously. It sold as high as \$43, but closed at \$42. In February it was quotable at \$41.50 @ \$42 all the month, but dropped to \$40.40 @ \$41 in March. It held at this price in April, but by the opening of May went up to \$41 @ \$41.50. There was now, however, a sudden spurt, and it advanced quickly to \$45 @ \$47.50, and by the close of the month some were even asking \$50. By the middle of June the higher asking price was dropped, and \$47.50 became the standard of the market, or \$9 more than it had been the year before. By the close of the month it dropped to \$46 @ \$46.50.

Imports.

Hardware, Machinery, &c.

Boker, Hermann & Co., Arms, cs., 45; Mdse., cs., 20
 Downing, R. F. & Co., Iron-Ware, cs., 9
 Electric Cutlery Co., Mdse., cs., 3
 Field, Alfred & Co., Mdse., cs., 9
 Folsom, H. & D. Arms Co., Arms, cs., 15
 Godfrey, J. has. J., Arms, cs., 7
 Graef Cutlery Company, Cutlery, cs., 3
 Hartley & Graham, Arms, cs., 22
 Kastor, Ad., Arms, cs., 2
 Lau, J. H. & Co., Arms, cs., 9
 Medina, J. A., Mach'y, cs., 2
 Perkins & Welsh, Mach'y, cs., 2
 Schloss & Sons, Mach'y, cs., 10
 Schoverling, Daly & Gales, Arms, cs., 10
 Sheldon, Geo. W. & Co., Mach'y, pgs. and pos., 15
 Sutro Bros. Brand Company, Mach'y, cs., 2
 Taylor, Thos., Mdse., cs., 11
 Thompson & Co., Mach'y, cs., 10
 Venable & Heyman, Mach'y, case, 1
 Von Longate & Detmold, Arms, cs., 4
 Washburn & Moen, Barb-Wire, reels, 40
 Werlemann, Arms, cs., 24
 Wiebusch & Hilger, Lim., Guns, cs., 2; Mdse., cs., 20
 Windmuller & Roelker, Arms, cs., 7
 Witte, John G. & Bro., Cutlery, cs., 8
 Order, Furnace-Doors, 17; Hardware, for Jamaica, pgs., 187

Coal Market.

The Anthracite Coal trade is dull and unsatisfactory, failing to realize the expectations formed earlier in the season. A plethora of production in excess of requirements is the real source of embarrassment and a menace to the schedule of prices. Considerable Coal is said to be afloat in the harbor at low prices, and reports obtain currency suggestive of sharp competition between rival contractors. Free Burning, f.o.b., is quoted without change; Broken, \$4.90; Egg and Chestnut, 4.15; Stove, \$4.40. It is said that Stove can be bought as low as \$4, and other sizes at a proportionate reduction. The Anthracite Coal production for the week ending August 10 is 767,000 tons, or about the same as for the previous week, but is below the average for the last two months. Since January 1 it is 19,745,000 tons, which is a decrease of about 1,000,000 tons compared with the same time in 1888.

Bituminous Coal is in good demand, so that all supplies are readily absorbed. The pool price of \$3.25, f.o.b., is said to be fully maintained. Cars are scarce, and freights are high. Cumberland shipments for the week are 62,602 tons; Clearfield, 67,681 tons; Beech Creek, 40,763 tons.

The Philadelphia *Ledger* says: "The movement of Coal to the Western distributing points via lake and rail and all-rail routes continues large, and has caused a scarcity of cars at some mines, owing to their being detained for return cargoes of east-bound grain." The improvement in the Iron trade is beginning to be felt in the consumption of Coal. Western trade slowly improves, but Eastern orders are delayed in hopes of lower freights. The demand for furnace sizes is excellent, and since the strike of the Coke operators in the Connellsville region the Iron-furnace men, who have been using more Anthracite, have been urgent for immediate shipments of Coal. The Philadelphia *Inquirer* says that in view of the pendency of the suit of Cox & Bros. vs. the Lehigh Valley Railroad Company before the Interstate Commerce Commission there will be no advance in Anthracite freight tolls this fall.

A bill in equity in the suit for possession of the Reading's Coal lands was filed at Pittsburgh Monday by the plaintiff company. One allegation made is that the Reading Coal and Iron Company contemplate entering a Coal trust.

The Connellsville Coke region is disturbed by the riotous Hungarians. The Knights of Labor say that firms controlling 10,000 ovens have signed the scale, and that 3000 men only are idle.

A Coal meeting to advance prices was held on Wednesday afternoon, but no result could be attained in season for this issue.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, August 14, 1889.

The transactions in Block Tin have been on a large scale, and the market has shown decided strength, prices advancing nearly £2. 10/. In some quarters the statement is made that a large "invisible supply" exists which is likely to come forward at any time, but the "bull" party assert that such is not the fact. Besides lively purchases on speculative account there has been a good consumptive demand and the position generally looks favorable. Late Tuesday there were sales of spot at £91, and on to-day's operations a further 5/ advance was paid.

The advance in cash Merchant-Bar War-rants to £44, caused by light offerings and "bear" coverings, together with more or less support given by French holders of Copper, was followed by a reaction to £42. 15/, due to realizations by some holders. At the decline the offerings decreased and the "bears" were neutral, having covered their fresh short sales. During the last few days some few new purchases for speculation were made and prices gradually hardened, prompts selling up to £43. 17/6 and futures at £42. 10/. To-day prompts sold at £43. 5/. Chili operators are said to have been the most prominent sellers on this rise.

In Pig-Iron there has again been a large business and investors as well as consumers have figured prominently in the buying. Canada and the Continent have taken increased supplies. The advance on Cleveland Pig and Hematites is of greater ratio than that on Scotch Pig and they are relatively stronger. The exports to the United States during July were 11,000 tons, or 1000 tons more than for the corresponding month last year. Compared with those of last week prices of makers' brands of Scotch show 6d to 2/ rise, Middlesborough 1/6, and Hematites 2/ @ 2/6 advance. The proposed amalgamation of the Staffordshire Sheet works has fallen through.

Trade in Tin-Plate has been quite brisk and the market is strong. Makers are fairly booked, and the outlook is so much brighter than it was a short time ago that the advisability of establishing a generally higher range of prices is being discussed. Stocks at shipping ports are quite heavy, amounting to about 384,000 boxes, against 236,000 boxes at the corresponding date last year. Last month's exports to the United States were 24,000 tons, against 27,000 tons for July, 1888.

Scotch Pig.—The market excited and active, with all brands considerably higher and stronger at the advance.

No. 1 Coitness, f.o.b. Glasgow	59/6
No. 1 Summerlee, " "	58/
No. 1 Gartsherrie, " "	56/6
No. 1 Langloan, " "	58/
No. 1 Carnbroe, " "	50/
No. 1 Shotts, " at Leith	57/6
No. 1 Glengarnock, Ardrossan	54/6
No. 1 Dalmellington, " "	49/6
No. 1 Eglinton, " "	47/6
Steamer freights, Glasgow to New York, 4/;	
Liverpool to New York, 10/.	

Cleveland Pig.—Makers' views are higher by 1/6, and a good business has been done at the enhanced prices. No. 3 Middlesborough quoted 43/9, prompt.

Bessemer Pig.—A very heavy business done, and the market strong at 2/ @ 2/6 advance. West Coast brands, mixed numbers, 54/ @ 54/6, f.o.b. shipping point.

Spiegeleisen.—There has been more doing and the market remains very firm. English 20 % quoted 80/, f.o.b. at N. W. England shipping point.

Steel Rails.—Prices are no higher but the market continues very firm and fairly active. Heavy sections quoted at £4. 17/6 and light sections £5 @ £5. 5/, f.o.b. at N. W. England shipping point.

Steel Blooms.—Only a moderate trade in these and prices unchanged. We quote £4. 7/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—A fairly active business still going on and prices held firmly. Bessemer, 2½ x 2½ inch, £4. 12/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—There have been moderate sales at steady prices. Bessemer, £4. 15/, f.o.b. at N. W. England shipping point.

Old Rails.—Quite a good trade in these, but at rather easier prices. Tees quoted at £3 @ £3. 2/6, and Double Heads £3. 7/6 @ £3. 10/, c.i.f., New York.

Scrap-Iron.—A fairly active demand and prices steady. Heavy Wrought quoted £2. 2/6 @ £2. 5/, f.o.b.

Crop Ends.—The market firm and demand fair. Bessemer quoted £2. 12/6 @ £2. 15/, f.o.b.

Tin-Plate.—There has been a good business at firm prices for all kinds. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	15/9 @	14/3 @
IC Bessemer Steel, Coke finish	14/ @	14/3 @
IC Siemens	14/3 @	14/6 @
IC Coke, B. V. grade	13/6 @	13/9 @
Charcoal Terne, Dean grade	12/6 @	

Manufactured Iron.—Business in this line very brisk. Sheets strong at last week's advance and Staffordshire Bars 5/ up. We quote, f. o. b. Liverpool:

Staff. Marked Bars	£ s. d.	£ s. d.
Common	@ 8	15 0
Staff. Bl'k Sheet, singles	@ 7	2 6
Welsh Bars (f.o.b. Wales)	6 7 6 @	6 10 0

Copper.—The market moderately active but prices irregular. Bars sold to-day at £43. 5/, spot, and £42. /5, three months' futures. Best Selected, £48.

Tin.—Dealings quite lively and the market stronger. Straits quoted at £91. 5/, spot, and £92. /5 for three months' futures.

Lead.—More doing in this metal and prices firm. Quoted £12. 15/ for Soft Spanish.

Spelter.—There is still a brisk demand and prices are strong. Quoted at £21 @ £21. 2/6 for ordinary Silesian.

Foreign Markets.

EQUIVALENTS

	Cents.
Franc, Peseta or Lira	19.3
Florin (Netherlands)	40.2
Lorin (Austria)	35.9
Virels (Portugal)	51.08
Virels (Brazil)	54.6
Mark (Germany)	23.8
Kilogram	2.205
Picul	134.

BRAZIL.

PARA, August 9, 1889.—**India Rubber.**—There are at present afloat for New York from here only 105 tons of Rubber of all grades to arrive in all the present month on board of two steamers.—*Per cable direct.*

CHILI.

VALPARAISO, June 7, 1889.—**Copper.**—A few small lots have changed hands, but as a general thing owners of smelting works are holding back in hopes of doing better later on. Sales for the fortnight aggregate 7173 quintals at \$15.15 @ \$16, f.o.b., equaling £40. 1/9, cost and freight, in England. **Coal.**—Is firmer and Newcastle near by afloat has brought 40/; Australian on the spot 27/. **Exchange.**—Has been steady at 25½d @ 26d.—*Weber & Co.*

EAST INDIES.

PENANG, June 20, 1889.—**Tin.**—Receipts sum up 10,000 piculs during the fortnight under review. Europeans bought 7328 piculs and Chinese 5800. Opening at \$34.75 picul, the market advanced to \$35, thence to gradually give way to \$33.85, the closing figure.—*Schmidt, Kustermann & Co.*

SINGAPORE, June 26, 1889.—**Tin.**—Our last report was dated 12th inst., since when transactions have continued to be of small extent at steadily declining prices. Arrivals have been small and stocks may be said to be exhausted. According to dealers' reports large arrivals may be looked for next month, but unless a spurt be made in mining we are inclined to doubt the truth of this. At the close there are buyers at \$33.50 picul. Shipments from the Straits Settlements to the United States during the first five months have been 57,069 piculs, against, respectively, in 1888 to 1884: 10,183, 32,139, 26,067, 16,051 and 24,969. Ad-

ditional shipments so far this month hence to New York have been by the following steamers, with the amount set against each: Gwalior, 1682 piculs; Sutley, 841; Anchises, 840; Agamemnon, 3784, and Orestes, 840. **Gum Copal.**—Large transactions, but confined almost solely to low qualities for American account. **Gum Damar.**—A little Bangar quality at \$19 picul is the only transaction that has been put through. **Tonnage.**—Rates for London have further given way and we close weak at 25/ for dead-weight. The supply of tonnage is ample and a further decline is looked for. **New York via Cape.**—Excepting that another vessel, the Annie Stafford, has been fixed to arrive, the position is unchanged. **For Boston.**—The Mystic Belle continues her loading. **Exchange.**—Has hardened again and closes firm at 3¼ for six months' credits.—*Gilfillan, Wood & Co.*

COLOMBO, CEYLON, June 27, 1889.—**Plumbago.**—Its scarcity continues. We quote at the close, in rupees, per ton: Large lumps, 145 @ 170; ordinary lumps, 125 @ 160; Chips, 80 @ 95, and Dust, 40 @ 65. Following are the shipments made since October 1: To England, 122,023 cwt.; to Venice, 102; to Hamburg, 6615; to Antwerp, 8282, and to Bremen, 1254; to Holland, 457; to Mauritius, 6; to India, 133; to Australia, 287, and to the United States, 108,996. **Exchange.**—Six months' sight 1¼ 15-32. The total Plumbago shipments since October 1 figure up 248,135 cwt., against 182,310 same time last year, 182,016 in 1887 and 142,329 in 1886.—*Volkart Bros., Ceylon and Malabar Coast, through their agent in New York, Mr. John W. Greene, 82 Wall street.*

MANILA, August 5, 1889.—**Hemp.**—Our market has been steady at \$13 picul, against \$9.75 same date last year, equaling per ton, cost and freight, £42. 12/9, against £32. 10/ last year. Clearances for the United States since last cable amount to 9000 bales, against none same week in 1888; since January 1 they were 144,000, against 99,000; loading for do., 8000, against 3000; cleared for England since January 1, 164,000, against 215,000; loading for ditto, 13,000, against 10,000; cleared for all other ports, 29,000 bales, against 46,000; receipts at all ports since last cable, 12,000, against 9000, and since January 1, 355,000 bales, against 346,000 in 1888 and 279,000 in 1887. **Freight.**—\$7.50, against \$6. **Exchange.**—3/5¼, against 3/5.—*Ker & Co., per cable direct to their agent in New York, Mr. Charles Nordhaus, 89 Water street.*

SPAIN.

BILBAO, July 20, 1889.—**Iron Ore.**—A moderate business has been transacted during the week at 7/ @ 7¼ Rubios and 8/3 @ 8/6 Campanil. Arrivals of steamers in search of cargo have been less frequent. Ore freights have slightly advanced. Shipments of Ore to date have been 2,223,847 tons, against 2,135,387 in 1888 and 2,430,300 in 1887. The export of Pig-Iron has been 1570 tons, which went to Ancona, Italy; coastwise only 25 tons left.—*Bilbao Maritimo y Comercial.*

RUSSIA.

ST. PETERSBURG, July 31, 1889.—**Petroleum.**—Baku shipped during the first four months via the Caspian Sea to Russian ports 711,232 puds of 36½ lb American crude, against 1,285,771 in 1888; refined 3,209,156, against 3,110,444; lubricating oil, 89,955, against 218,973, and residue, 15,952,316, against 10,683,842.—*Journal de St. Petersburg.*

BELGIUM.

BRUSSELS, August 3, 1889.—**Iron.**—The Belgian Iron markets remain well sustained. Orders are dropping in with the utmost steadiness for pretty much all products, causing makers to continue well booked. Castings for export form the only exception, and even for these orders have not ceased altogether, but they are momentarily flat. Quotations are the same as last given.—*Monteur des Interêts Matériels.*

GERMANY.

HAMBURG, August 3, 1889.—**Iron.**—The general aspect of the Iron situation in Rhenish-Westphalia has remained as lively, not to say buoyant, as before, and the tendency of values is still upward. Orders for Spiegel for the United States have lately been so large that the Spiegel syndicate has been able to apportion to all makers a portion thereof large enough to keep them busy for the balance of the year. It has improved to 69 marks, 10 to 12 %. Pig Iron has on the whole done remarkably well, but prices have not been raised any further. The demand for Finished is so good, even for export, that most of the rolling-mills are booked to the close of the year. The Wire branch is also looking up and prices are advancing. Foundries, machine-shops, car-makers, and the manufacturers of railroad material, all remain remuneratively busy. The quotation for Wire Rods is 123 @ 125; Steel Rails, 130 @ 135, and ditto for mines, 125 @ 130. **Metals.**—The only article still rapidly improving is Spelter.—*Borsenhalle.*

Hardware.

There is some improvement noticeable in business, which has not, however, yet become especially active. There is, however, some placing of large orders by jobbers and a fair business is being done with the smaller houses. In the matter of prices the market is remarkably steady and very few changes are to be noted.

Cut Nails.

All the dealers in this market appear to be very firm in their prices, and report quite a good demand for the season. The Eastern manufacturers are all troubled more or less with short stocks, which has its effect upon the stocks in warehouses in this city. Tenpennies are still very scarce. Western competition is disappearing, not being such an important factor in the territory tributary to this market as it has been. The only concessions now obtainable are for favorable specifications, prices being firmly held on ordinary lots.

The Western Cut Nail Manufacturers' Association met in Wheeling, W. Va., on Wednesday, the 7th inst. The object of the special meeting was to discuss the question of the new central organization, the preliminaries of which were arranged at a previous meeting and a charter obtained. The committee on the new organization submitted a favorable report, which after some discussion was laid over to the next meeting to enable the better adjustment of details and further consultations with local boards of some of the companies. It is stated on good authority that there are several concerns that refuse to join the new organization, and if they persist in their refusal it is likely that the scheme for controlling production and sales will fall through.

Miscellaneous Prices.

Considerable irregularity has developed in Picks and Mattocks, and while the combination nominally exists, it is regarded as failing to control prices owing to the fact that a prominent house has withdrawn from it. As a result irregular and considerably lower prices have been made. It remains to be seen whether it will be found feasible to restore the combination or whether the present uncertainty and irregularity will continue.

Manila and Sisal Rope are still weak and there has been a further shrinkage in prices. The market is not yet regarded as settled and buyers are still holding off.

There has been no improvement in the condition of the market in Tackle-Blocks, to which we referred in our last issue, and prices are irregular, some low quotations, especially in the West, having been made, and there are other indications that the terms agreed upon by the manufacturers are not adhered to as closely as was intended.

Export Trade.

The constant and more or less steady development of the export business in Hardware and related lines is a matter for congratulation. In many of the foreign markets the English and German manufacturers have a firm hold, and between the goods of established reputation which are recognized as a standard in the different colonies and those of inferior quality which are offered at very low figures, the American manufacturer has often considerable difficulty in marketing his products. But the energy and enterprise used are giving the goods made in this country an increasingly large sale in all the leading markets. Shipments to Europe are of increased volume, and business with Norway and Sweden is referred to as having assumed considerable proportions

and giving promise of still further development. Apart from the standard goods, such as Axes, Shovels, Handles, &c., which have an assured position in foreign markets, there is a constant demand for Hardware specialties, the smaller labor-saving implements, household articles, &c., and trade in many of these different lines is steadily growing. It is evident that the buyers in foreign markets are on the lookout for goods of this character which are suited to their needs, and articles ingeniously contrived and tastefully constructed are meeting with ready sale. As illustrations of the class of goods thus called for, it may be mentioned that Coffee-Mills, Wringing-Machines, Cork-Pullers, Rat and other Traps, &c., are going out in considerable quantities. But the abstracts which we are giving from week to week of the manifests of vessels for foreign ports will furnish many other illustrations and will be found deserving the careful attention of those who are interested in export business.

Among the other markets which are of large and increasing importance is that of Australia, which is regarded as of especial interest by American merchants and manufacturers, and where there is an increasing disposition to push the introduction of our manufactures. It may be mentioned that the last Australian mail was generally satisfactory, containing orders for a considerable amount of goods, although some houses refer to it as not having been entirely up to their expectations. It indicated, however, on the whole, a very satisfactory condition of trade, and its orders were large.

There is considerable activity among houses interested in export trade, and a good deal of enterprise is shown in reaching out for business and in perfecting arrangements for its extension. Dellazoppa & Co., Buenos Ayres, have established a house in this city under the charge of J. Van Maanen, who has recently been placing some large orders for Axes, Shovels, Canned Goods and various other lines. Strong & Trowbridge have opened a branch house in Australia, and George Trowbridge, of that firm, has recently returned from a business trip to London. J. W. Smith, the well-known buyer for W. H. Crossman & Bro., has gone to London, and Mr. Kirkpatrick, who has been for some time connected with their London house, has come to this city. Other changes in foreign and export houses are understood to be in contemplation, and some well-known manufacturers are seeking more direct relations with foreign buyers.

A recent issue of the *London Ironmonger* refers as follows to the shortcomings of American manufacturers and the lack of proper enterprise and care in connection especially with the Mexican trade:

We have so frequently had to publish complaints respecting the alleged faults of British manufacturers in connection with the goods they send abroad that it is with something like a feeling of relief that we learn there is "a fly in the amber" of our American competitors. It is true, of course, that two blacks do not make one white, yet it is not unsatisfactory to find that the manufacturers of other countries are not quite the "pinks of perfection" they have been sometimes described as being. We learn of the faults of the American manufacturers on this occasion from a source which may be deemed quite reliable and disinterested—namely, from Mr. Loughery, American consul at Acapulco, Mexico. In his report, dated January 24, 1889, to the State Department at Washington, that gentleman complains that the Mexican "stores are full of European goods; the machinery brought here in the main comes from England, while all that is most valuable that men wear or have in their houses comes from far distant lands." This state of things hurts the national pride of the consul, and he proceeds to criticize some of his countrymen in rather outspoken terms. He says the American consular reports are full of all sorts of complaints, whereas it is significant (to him) that the European

merchants and manufacturers make no complaints at all, but wisely adapt themselves to the situation. When the European goods arrive the papers are properly made out, the goods are of the quality desired and are put up in a safe and saleable manner. If implements are to be made the directions of the buyers are strictly carried out, whereas, says the consul, the Americans violate all the rules of common sense, quarrel with the Custom House, send goods that are unsaleable and put up in unsatisfactory packages, fail to make implements as desired and attempt to sell by circulars instead of by sample. Further, the Europeans evidently pay heed to the recommendations of their consuls, while the Americans take no pains at all. They do not move intelligently, and are seemingly ignorant of the efforts made by their Government to inform them and promote their trade. This is the gist of the consul's report. It is very refreshing reading for Britishers, and encourages us to believe that our American friends are not, after all, the paragons they have been depicted. We are glad that the revelation of their imperfections has come from an American source. Had the statements to which we have referred been penned by a writer of any other nationality they might and would have been impugned, but as they have emanated from a United States consul we are entitled to accord to them the utmost credence and even to permit ourselves to enjoy a smile of satisfaction.

A New Wire-Nail Card.

It is significant of the dissatisfaction with which the existing condition of things in Wire Nails is regarded that the Wire Goods Company, Worcester, Mass., are out with an entirely new scheme of card and list. They issue what they call their "level card" and also a list on assorted Nails which they call their "level list." Mr. Parmelee, president of the company, explains that they have found it almost impossible to do business with comfort by reason of the fact that there are several different lists abroad, and that there have always been various absurdities and inequalities in the lists which have grown up or been forced upon the market, and that this leads to great injustice, and that it is impossible to name a price on Wire Nails without first seeing the specifications which a customer has to offer. Concerning ambiguity in the designation of Nails and other reasons for the new list which is submitted by the company, the following points are made:

It has long been an unpleasant fact that the same Nail called by some other name has been subject to an entirely different price. For instance, a 2-inch No. 12 has one price as a discount Nail; it has quite another as a 6d Common Nail; it has quite another as a 6d Hinge Nail. The same is true of a 2½-inch No. 12, which is a Common Nail, or an 8d Brad, or an 8d Box, or an 8d Casing, or an 8d Fine, and in each case is quoted at a different price, according to the name that happens to be given it. Much annoyance has been experienced from customers who have succeeded in placing the desirable part of their specification with one manufacturer, and who shop around among other manufacturers for the undesirable remainder. Many Nails in the list are sold at a heavy loss, the manufacturers continually hoping to come out somewhere near even by the extras on other sizes. This is manifestly a precarious and unbusinesslike way of marketing the goods and it seems evident that there should be no extras, but that each Nail should stand upon its own foundation and bear its own proportion of the profit or loss. It seems also evident that a rod Nail should be the base and that when a quotation is made it should be flat on the leading and most commonly used Nail. From the inequalities in the list the pernicious habit of quoting net prices on each size has also grown up, until it has become very difficult to quote a customer without first carefully considering his exact specification and spending much time in studying over how the same Nail might be classified so as to bring it under a different list. For these various reasons the Wire Goods Company decide to publish what they call their "level card" and also their "level list" on the as-

and Ira J. Howe, while Mr. Ira G. Howe, Sr., who has been a successful merchant in Lafayette for a period of 45 years, will remain in the firm as a special partner. The Perrin Building is regarded as admirably adapted to the Hardware trade, having been built for that purpose, and it is expected that the new firm will take a front rank in this new departure. They are men of enterprise, well versed in the Hardware business and with a wide acquaintance. The name of the firm will remain Howe & Shipley.

It is announced in one of our exchanges that Mr. O'Tool, of Hutchinson, Kan., has purchased the Hardware stock formerly owned by Mr. Axtell, of Santa Fé. Our exchange remarks, wishing Mr. O'Tool success in this enterprise, that the Hardware store which establishes itself in the confidence of the people now is the one that is going to win when the country fills up and competition begins.

Items.

L. M. Rumsey Mfg. Company, St. Louis, Mo., have issued a new catalogue devoted to Hand and Windmill Pumps, both Lift and Force. It is evident that especial care has been taken in compiling it, and that the company have spared neither pains nor expense in making it attractive. It is printed on 100-pound book paper, enameled on both sides. This catalogue, representing as it does this extensive line of goods, will be found to serve the convenience of the trade, to whom it has, we understand, been distributed, and an examination of it shows that it embodies a number of new features in the Pump line. It is intended as a supplement to their regular Pump catalogue, other leading branches of their business being represented in separate catalogues.

Surpluss, Dunn & Alder, 97 Chambers street, New York, have been appointed agents of the E. Jenckes Mfg. Company, Pawtucket, R. I., manufacturers of Bright Wire Goods, Belt Hooks, Spring Cotters, Flat Spring Keys, Hardware specialties, &c., thus adding an important line to those which they are now representing.

Staver & Walker, Portland, Ore., issue a handsome and comprehensive catalogue of Machinery and Vehicles, in which they are dealers. The Machinery includes an extensive line for farm, dairy and mill use, including Engines and Boilers. A complete line of Sawmills and Shingle-Mills of various capacities is also exhibited, with Belting, Hose, Oils and Machine Supplies. The Carriage repository is referred to as exceptionally well equipped, including Wheeled Goods, Snow Vehicles, Harness and Carriage Furnishings and Supplies of all grades and prices. The great growth and development of the Pacific Northwest is referred to as having created a demand for new and improved machinery in every department of industry, which they are endeavoring thus to supply. They also issue a number of separate circulars relating to specialties which they are handling.

The Hazen Company, Cincinnati, Ohio, have moved their office from the southwest corner of Fourth and Main streets to their factory building, corner Fifth and Eggleston avenue. They make the announcement of this change in a circular, giving a diagram of the locality and showing the ground occupied by their factory and mill.

King, O'Connor & Co., Baltimore, Md., issue a price-list of Casters manufactured by them. Illustrations are given of the different patterns, with list prices.

The Moran Bolt and Nut Mfg. Company, St. Louis, Mo., whose works were destroyed by fire last March, announce

that their factory has been rebuilt and that they are now in shape to fill orders promptly, as their facilities for turning out Machine-Bolts, Ridge-Bolts, Gimlet-Pointed Lag-Screws, Coach-Screws, Nuts, &c., have been greatly increased.

Edward K. Tryon, Jr., & Co., Philadelphia, Pa., have issued a catalogue devoted to Shotguns, Rifles, Revolvers, Ammunition and Sporting Goods in large variety. It is accompanied by revised discounts, in which some quotations are given deserving the attention of the trade. This list, covering as it does 112 pages, will be of interest as showing an extensive assortment of the goods to which it relates.

It will be observed that in their advertisement on page 75 Cordley & Hayes, 173 and 175 Duane street, New York, illustrate their Indurated-Fiber Dish-Pans, a line which they have recently put on the market and to which we referred in our last issue.

S. Waterman, Milwaukee, Wis., issues circulars relating to the Adjustable Interlocked Stove-Lid and also to the Gem Patent Thermometer Sad-Iron, which is alluded to as a new article, of which a full description is given.

Ames Sword Company, Chicopee, Mass., have issued a new edition of their illustrated catalogue showing their patent Perfection Padlocks, giving illustrations and full descriptions. The catalogue is neatly printed.

The Indiana Wire Fence Company, of Crawfordsville, Ind., manufacturers of Two and Four Point Barb Wire, have recently put in a lot of new and improved machinery for making their Wire and otherwise increased their facilities and plant to meet the necessities of their business. In a circular letter issued to the trade recently they say: "We are especially careful in the selection of our stock. Our Barb Wire is inspected a second time in the process of barbing, and each spool stamped with the operator's number, who is held accountable for the quality of iron he makes." Their new circular price-lists will be ready for distribution when fall trade begins.

Artistic Trade Literature.

The Sherwin-Williams Company, Cleveland, Ohio, issue a specimen of trade literature which cannot well be described as a catalogue and is too handsome and pretentious to be spoken of as a circular. Suffice it to say that it is a book gotten up with exceptional taste. It is entitled "A Visit," and the text is in the form of a dialogue narrating the experience of a visitor who was conducted through the extensive Paint and Color manufactory of the Sherwin-Williams Company. Not content with describing in words the experiences of a supposititious visitor the aid of the engraver has been utilized to good advantage. Apart from the interest attaching to a description of this extensive establishment, any one who notices the book but casually cannot fail to be struck by the high grade and quality of the printers' work which it exhibits. The printing and binding were done by Gies & Co., Buffalo, N. Y., the well-known specialists in fine trade-publication work. The engraving was done by the Photo-Electrotype Engraving Company, of this city, and the drawings and designs are the work of Mr. George E. Graves and Mr. Hencke. As we have stated, there is nothing particular to mention in this book, for the whole contents is of equal interest in describing the manufactory of the above concern. In the opening pages we are shown the interior of the offices in Cleveland, Chicago and New York, after

which introduction the reader is carried into the factory at Cleveland and there taken through step by step, with every detail of process made plain to his eyes by the numerous engravings. The cuts show interior views of all parts of the establishment, while some are devoted to special machinery. Numerous quaint and tasteful vignettes are scattered through the pages in a way to relieve what might possibly have been a monotony of excellence of the larger illustrations. Many of the cuts have the soft finish peculiar to the new-fashioned methods of engraving, and, as they are printed on a very highly calendered paper, all the fine lines and details are brought out with peculiar clearness. The finish of the paper also renders the letterpress clean and sharp, there being no broken types nor dull letters. As a work of artistic printing the book before us must take a very high rank among trade publications, and it is superfluous to add that it reflects great credit upon Gies & Co. A notice of it cannot be dismissed without a word concerning the binding, which is done in a very odd fashion. It is a cloth-bound book, but instead of lapping the cloth over the edge of the boards it is allowed to project $\frac{1}{2}$ inch or so, with a rough edge. Beside the oddity of this binding, it is also a very sensible way of protecting the book from injury.

Huntington-Hopkins Company.

The following article from the San Francisco *Journal of Commerce* in regard to the well-known house of Huntington-Hopkins Company, of that city, will be of interest. It will be observed that besides giving a description of their new and very commodious building, their removal to which we recently announced, it gives also a history of the company and information in regard to their organization and business:

This house, which is associated with the early history of California and the Pacific Coast, was founded by Collis P. Huntington in 1849 at 54 K street, in the city of Sacramento. Early in the fifties a partnership was formed with Mark Hopkins, under the firm name of Huntington & Hopkins. At that time, although the business in their line was the most extensive on the coast, the premises occupied had a frontage of but 25 feet and a depth of 100 feet. It has steadily increased in volume until at the present time they occupy 80 feet on K street by a depth of 160 feet and 140 feet on L street by a depth of 160 feet.

On January 1, 1868, several of the older employees of the firm were admitted into partnership, and it was conducted under the firm name of Huntington, Hopkins & Co. until February 23, 1888, when the present corporation was organized. In the year 1872 the firm purchased the business of the Russell & Erwin Mfg. Company, and established a house in San Francisco at the junction of Bush and Market streets. A few years later they purchased the adjoining lot corner Front and Market streets, and erected a handsome four-story iron-front building. It was thought at the time that this would accommodate them permanently, especially so as many staples were stored in a warehouse and yard on First street near Market, where they afterward erected a commodious brick structure called the Sacramento Building, and in which they continued to carry the heavier class of goods.

Business still increasing beyond all expectations, and finding their Market street stores becoming too crowded, this company purchased the lots extending from the Sacramento Building through to Fremont street, upon which they have erected the handsome five-story building represented on this page.

The new quarters have a frontage on Fremont street of 92 feet, on First street of 137 $\frac{1}{2}$ feet, and a total depth of 275 feet,

making the most extensive Hardware and Iron establishment in the country, and as complete in all its appointments as money and ingenuity can make it. The building is divided by a brick wall running from ground to roof into 30 and 60-foot stores, with connecting archways on each floor, thoroughly protected by fire-proof doors when not in use.

Entering the 60-foot store on the main floor we find at the front the offices of the manager and assistant. Immediately in the rear are the headquarters for the salesmen. Scattered throughout the room in convenient localities are desks for the use of the city salesmen and other clerks of the establishment. At the right is a hydraulic elevator for the use of salesmen filling orders, by the side of which is a package elevator, also run by hydraulic power, capable of carrying 300 pounds. At the rear of these, and running along the entire north wall, are the sample-rooms, with large plate-glass windows, affording a fine view from the store-room of a complete line of Builders' Hardware, Mechanics' Tools, &c.

Opposite this room is a line of counters covered with glass show-cases, containing samples of Fire-Arms, Cutlery of all kinds, fine Machinists' Tools, &c., while counters and platforms covering almost the entire floor are used for the display of larger and more bulky goods. On either side from floor to ceiling, entire length of room, is shelving with galleries. At the rear of this is the main office for the use of the office-manager, cashier, book-keepers, accountants, &c.; also the private office of the corporation president. The offices are without doubt superior to anything in the mercantile line on this coast, being fitted up in solid oak, with plate-glass and coppered bronze grill trimmings, two-story vault with stair-way, and have every convenience for the prompt transaction of business. On the second floor we find the packing-room, nearly the entire space being required for this purpose. Shelving each side entire length. The upper floors are used for the storage of Case Goods, Shovels, Wheelbarrows, Trucks, &c. Returning to the main floor, we enter the 30-foot section and find a driveway extending from Fremont through to First street. At the right of the entrance is an elevator for receiving goods, and near by the receiving-clerk's office. Further on we find on elevator for shipping and another package elevator, convenient to the shipping-clerk, whose desk is connected by speaking-tube with the packer. Continuing, we come to the Iron warehouse, a one-story building 50 x 137½ feet, with an iron and glass roof, two-story Iron rack, built from cellar-floor up. Here is the large elevator for bringing Iron from the cellar, while on either side of the driveway running to First street are racks reaching to the ceiling filled with Iron Pipe, Casing and Boiler-Tubes.

Descending to the cellar, we find that the entire floor is made of the Ransome patent cement. Here is where the heavier stock, consisting of Nails, Horseshoes, Plate-Iron, Grindstones, Barb-Wire, Handles, &c., are stored, while a large space is devoted to the machinery necessary for use in this establishment. We find here an Abendroth & Root patent tubular safety boiler of 50 horse-power, three large accumulators or air-compressors to furnish pressure for the eight hydraulic elevators, two powerful steam-pumps, a 50 horse-power steam-engine, a machine for corrugating sheet-iron, two machines for cutting and threading iron pipe from ¼ inch to 6 inches, and a Westinghouse dynamo of a sufficient capacity to furnish 125 lights of 16 candle-power each, the building being lighted by electricity throughout. The corporation are now in a position to transact business better than ever before. Their trade extends over the entire Pacific Coast, including British Columbia, Mexico and the Pacific Islands. The names of the officers are Albert Gallatin, president; W. R. S. Foye, secretary, who reside in San Francisco; Charles Miller, vice-president, and C. P. Huntington, treasurer, who reside in New York.

Exports.

PER BARK LAURA, JULY 9, 1889, FOR EAST LONDON, SOUTH AFRICA.

By Corner Bros. & Co.—114 cases Agricultural Implements.

By W. H. Crossman & Bro.—22,400 pounds Barb-Wire.

By Combs, Crosby & Eddy.—60 dozen Handles, 185 cases Plows and Parts, 15 cases Plow Parts, 33 cases Plows and Parts, 60 dozen Handles, 10 dozen Axes, 192 dozen Handles, 500 Broom-Handles, 10 boxes Clothes-Pins, 12,500 pounds Nails, 5000 feet Fuse, 25 Scales, 20 dozen Hammers, 600 feet Hose, 6 Scales, 2 Wringers, 40 dozen Axes, 1 dozen Grindstones and Parts, 2 Scales, 5 cases Sewing-Machines, 1 dozen Lawn-Sprinklers, 1½ dozen Grindstones, 60 Stoves, 8150 pounds Sash-Weights, 40 Step-Ladders, 144 dozen Chandeliers, 12 Children's Carriages, 48 dozen Handles, 500 Broom-Handles, 80 cases Plow Parts, 40 dozen Brooms, 47 pounds Sash-Cord, 10 dozen Sash-Fasteners, 6500 pounds Nails, 34 dozen Axes, 24 dozen Edge Tools, 600 feet Hose, 12 Lawn-Sprinklers, 2270 pounds Sash-Weights, 20 Ranges, 20 crates Range Fixtures, 8 Plows, 12 Churns, 36 dozen Handles, 288 Broom-Handles, 166 Plows and Parts, 40 dozen Brooms, 18 Ladders, 32 dozen Axes, 3500 pounds Nails, 54 dozen Locks, 1 dozen Sad-Irons, 27 Churns, 16 dozen Axes, 500 Broom-Handles, 3 dozen Wooden Scoops, 12 Churns, 1000 Broom-Handles, 6 dozen Brooms, 10 boxes Clothes-Pins, 3800 pounds Nails, 21 Churns, 13 Clocks, 13 dozen Carpenters' Tools, 12 Lawn-Sprinklers, 5 dozen Carpenters' Tools, 16 dozen School Slates, 1 Mower, 7 dozen Plated Goods, 9½ dozen Edge Tools, 32 gross Carpenters' Tools, 36 dozen Toy Sad-Irons, 12 dozen Shovel Handles, 8 reams Flint Paper.

PER BARK HUDSON, JULY 20, 1889, FOR ADELAIDE, AUSTRALIA.

By Meriden Britannia Company.—2 boxes Plated-Ware.

By W. Lunham.—12 cases Axes.

By Mailler & Quereau.—5 cases Forks, 2 cases Cultivators, 3040 pounds Axes, 2 cases Wagons, 18 cases Mill Machinery.

By McLean Bros & Rigg.—27 Oil-Stoves, 7 dozen Glue, 30 dozen Axle-Grease, 6 dozen Handles, 36 dozen Mouse-Traps, 130 dozen Handles, 9 dozen Plumbs and Levels, 1 case Castings, 12 dozen Thermometers, 50 dozen Axle-Grease, 20 dozen Axes.

By Meriden Britannia Company.—4 packages Plated-Ware.

By Lalanc & Grosjean Mfg Company.—9127 pounds Household Utensils, 1656 pounds Household Utensils.

By Itzley, Doubleday & Co.—4480 pounds Axle-Grease.

By Russell & Erwin Mfg Company.—4 cases Hardware.

By Richard Irwin & Co.—2 cases Plated-Ware.

By R. W. Cameron & Co.—5 cases Hardware, 240 dozen Axle-Handles, 10 dozen Wash-Boards, 1 case Machinery.

By Arkell & Douglas.—3 cases Handles, 4 cases Granite Iron-Ware, 40 pounds Hardware, 2 dozen Axes, 5 cases Tin-Ware, 22,642 pounds Barb-Wire.

By W. H. Crossman & Bro.—2 packages Stove Parts, 4 gross Stove-Polish, 1 dozen Mangles, 6 dozen Grindstone Fixtures, 18 dozen Hay-Forks, 38 Perambulators, 38 dozen Axes, 2½ dozen Mouse-Traps, 3 cases Slates, 42 packages Carriage-Ware, 6 cases Hardware.

By H. W. Peabody & Co.—34 packages Hardware, 1 case Agricultural Implements, 249 dozen Handles, 69 cases Hardware, 5 crates Castings, 1 bundle Stamped-Ware, 9 packages Lamp-Ware, 18 cases Wringers, 2 cases Strops, 2 cases Windmills, 8 packages Pumps, 1 case Carriage-Ware, 8 cases Hardware, 1 case Perambulators, 18 dozen Handles, 1 case Wringers, 4 cases Carriages, 2 cases Hardware, 6 dozen Shade-Rollers, 500 Handles, 12 packages Hardware, 92 dozen Handles, 1 case Shade-Rollers, 17 cases Bolts and Nuts, 27 cases Hardware, 3 dozen Wringers, 1 case Shade-Rollers, 24 bundles Wash-Boards, 5 packages Lamp-Ware, 2 crates Blacking, 1 case Agricultural Implements, 305 dozen Handles, 1 case Machine Supplies, 1 bundle Trucks, 7 cases Wringers, 2 cases Hardware, 80 dozen Slates, 1 bundle Hardware, 1 case Nails, 1 case Air-Guns, 8 packages Lamp-Ware, 26 pieces Hardware, 1 case Agricultural Implements, 2 cases Hardware, 1 case Wagon-Jacks, 1 bale Rubber Hose, 6 cases Cutlery, 1 case Rifles, 1 case Tools, 1 package Metal, 2 cases Rims, Spokes and Hubs, 4 cases Spokes and Rims, 8 bundles Rims, 1 case Tin-Ware.

PER SHIP NEBO, JULY 24, 1889, FOR SYDNEY, N. S. W.

By W. K. Freeman.—5 cases Corn-Mills, 30 dozen Axes, 24 dozen Picks, 109 pounds Drills.

By Bradley & Hubbard Mfg. Company.—10 packages Lamp Goods.

By Ansonia Clock Company.—81 boxes Clocks.

By W. & B. Douglas.—41 Pumps.

By Barden & Ackermann.—1 box Clocks.

By W. H. Peabody & Co.—6 cases Stamped-Ware, 26 packages Stoves, 2 packages Castings, 1 case Files, 2 packages Hardware, 46 cases Fire-Arms, 10 cases Hardware, 2 cases castings, 1 case Castings, 72 dozen Blacking, 1000 pounds Nails, 10 cases Carbons, 1 case Carriage, 100,800 pounds Barb-Wire, 1 case Edge Tools.

By A. Field & Co.—36 dozen Harness-Ware.

By Peters & Cathoun Company.—817 pounds Saddlery.

By J. A. Gifford.—4 boxes Harness.

By Meriden Britannia Company.—9 boxes Plated-Ware.

By L. P. Rose.—13 barrels, 6 cases Plated-Ware.

By Mailler & Quereau.—1 case Castings.

By Morris, Strouse & Co.—120 dozen Handles, 50 dozen Wash-Boards.

By K. W. Forbes & Son.—20 dozen Pick-Handles, 2 packages Lamp-Ware, 2 dozen Bench-Screws, 10 packages Carriage-Ware, 840 pounds Carriage-Bolts, 1 case Hardware, 6 packages Plows, 2 cases Emery-Wheels, 136 packages Sewing-Machines.

By F. B. Wheeler & Co.—3 packages Lamp-Goods, 4 cases Clocks, 8 crates Stoves, 6500 Bolts, 3 cases Clocks, 3 cases Hardware.

By Strong & Trowbridge.—6 cases Bolts, 1 case Hardware, 2 cases Castings, 5 cases Tools, 1 case Hardware, 4 cases Pumps.

By R. W. Cameron & Co.—63 cases Agricultural Implements.

By Combs, Crosby & Eddy.—10 gross Clothes-Pins, 30 dozen Wood Handles, 6 dozen Broom-Handles, 1 dozen Rakes, 6 dozen Axle-Grease, 3 dozen Edge Tools, 4 dozen Wire Traps, 20 dozen Hardware, 4 dozen Tools, 2 Wringers, 3 dozen Tools, 2 gross Shoe-Polish, 8 Churns, 2 Pumps, 1 dozen Handles, 6 dozen Slates, 1 dozen Handles.

By V. Basanta.—106 Velocipedes, 9 dozen Wagons, 36 dozen Handles, 11½ gross Fruit-Jars, 50 gross Paper Caps, 16 Perambulators, 177 Clocks, 32 dozen Wash-Boards, 949 gross Clothes-Pins, 12 dozen Rolling-Pins, 36 sets Sad-Irons, 1 gross Lemon-Squeezers, 36 dozen Hammocks, 38½ dozen Saws, 45½ dozen Handles, 105 Planes.

By A. S. Lascelles & Co.—24 cases Axle-Grease, 22 dozen Braces, 3 gross Cow-Bells, 4 racks Churns, 6 dozen Knives, 1½ dozen Broilers, 3 dozen Bird-Cages, 100,000 Primers, 3 cases Machines, 2 dozen Razors, 16 packages Tin Cans, 2 dozen Levels, 1 case Hardware, 2 gross Graters, 2 gross Lemon-Squeezers, 5 dozen Meat-Choppers, 2½ dozen Vises, 5 cases Fire-Arms, 4 dozen Wrenches, 1 gross Scissors, 1 dozen Revolvers, 8 dozen Mat-tocks, 81 packages Hardware, 4 cases Brooms, 68 bundles Wash-Boards, 3 cases Door-Springs, 2 Carriages, 2 cases Plated-Ware.

By Stewart & Hartshorn.—40 cases Shade-Rollers.

By Healy & Earl.—1 box Gauge-Glasses, 4 boxes Screw-Cutters, 4 boxes Saws, 1 box Wood-Working Machinery, 2 boxes Saws, 1 box Emery-Wheels.

By McLean Bros. & Rigg.—82 dozen Handles, 24 dozen Egg-Timers, 15 dozen Hammers, 6 dozen Wrenches, 96 dozen Fire-Shovels, 27 dozen Oilers, 7000 Bolts, 18 dozen Whip Handles, ¼ dozen Trucks, ¼ dozen Post-Hole Diggers, 10 sets Wheels.

REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Animal and Vegetable Oils.

The volume of business has been larger the past week in several departments, and nearly all the more prominent lubricants are now moving with more freedom than the situation ten days ago afforded reason to anticipate. Manufacturers have taken up over 2000 barrels of crude Sperm-Oil in New Bedford; exporters and manufacturers, together, have purchased fully 1500 barrels of crude Menhaden-Oil, and upward of 2000 barrels of Cotton-Seed-Oil have been marked off. Apart from these ex-

tensive dealings there has been a very good jobbing trade nearly all along the line, and it is in the instance of the minor Oils only that values have tended toward a lower level. There is more uncertainty surrounding the probable opening of the new season for Cotton-Seed product and also a little as to the manufacture of Linseed-Oil; but, these cases aside, the general situation appears flattering for a good business the coming fall.

Linsseed-Oil.—The market is in a somewhat peculiar condition. New domestic seed is arriving more freely in the West and tending downward in price. Calcutta seed, on the other hand, continues high in price, and the crop is still represented as short. Meanwhile the prices for city-made Oil are kept at 60¢ for Raw and 63¢ for Boiled, but "independent" Western concerns are closely watched and the maintenance of the prices above quoted seems to depend in a good measure upon the doings in that quarter. Western Raw Oil does not appear to be offered here at less than 58¢, however, and the movement of city product is said to be fairly active.

Lard-Oil is about 1¢ better to-day than a week ago. Considerable present-make prime was sold at 52¢ @ 53¢, according to brands, which fact, together with a rise in the cost of raw material, led to an advance to 53¢ @ 54¢. At the latter figures there has been a very fair business and the market closes quite firm.

Cotton-Seed-Oils.—Fully 2500 barrels Summer Yellow, chiefly low grades, have been disposed of at prices within the range of 40¢ @ 45¢. This clears off considerable surplus and places the market in better shape. For choice qualities 48¢ @ 52¢ is asked. The crude product has remained quiet until within a few days, when about 700 barrels were disposed of.

Sperm-Oil.—The feature of the market has been purchases of 2100 barrels crude Oil by New Bedford manufacturers. In the manufactured products the jobbing trade has been somewhat larger, and prices remain very steady.

Menhaden-Oil.—Reports from the fishing have again recorded a small catch. The offerings of crude Oil have been moderate in consequence and that fact along with a fairly good demand has stiffened prices. Pressed and Bleached Menhaden and Tanners' Oils are also firmer, but not quotably higher.

Whale-Oil.—The market for Whale has undergone no change. Business has been of strictly routine character and at old prices.

Cocoonut-Oil.—Ceylon product has declined to 51¢, on spot, and 52½¢, to arrive, being in light demand and freely offered. Cochin and Cuban are unchanged.

Olive and Palm have been slow of sale and without quotable change as to prices.

Paints and Colors.

Trade in the more staple lines of Paints and Colors has been rather more active. In fact, the week under review has shown a very flattering improvement, as far as the general distribution is concerned, and in more departments than one it seems to have been the liveliest experienced since early summer. Large individual transactions have not figured with any remarkable prominence in the week's operations, although some bulky goods have been taken in quite fair-sized lots. The improvement was chiefly in the number of moderate-sized orders received from various quarters and indicate that jobbers and large retailers had allowed their stocks to run down to a low point, necessitating replenishing in view of the brisker consumption latterly consequent upon the more favorable weather for out-of-door work. In the instances of Quicksilver Vermilion, Chalk and Whiting some ir-

regularity in values prevail, but with these exceptions prices have ruled quite steady.

White Lead, &c.—Manufacturers report for the past week the best aggregate business that has been experienced since early in the summer. Buyers who have been holding back in expectation that some change in prices or rebates would be made by the "trust," or that outside companies would undersell, seem to be convinced that there is little probability of either for the time being. This fact has served to promote freer buying. An additional impetus has been given business in jobbing circles by the larger consumption due to more favorable weather. Red Lead, Litharge and American Orange Mineral have also had rather better sale. Prices are as follows: White Lead, in oil, in lots of 500 lb and over, 7¢ $\frac{1}{2}$ lb; less quantities than 500 lb, 7½¢ $\frac{1}{2}$ lb, net; in 25-lb cans packed in 100-lb cases, 1½¢, and in 12½-lb cans, 1¢, over keg-price; in 1 to 5 lb cans, assorted, in 100-lb cases, 2½¢ over keg-price. Dry White Lead, in kegs, 7¢ $\frac{1}{2}$ lb. Red Lead, in kegs, 7¢ $\frac{1}{2}$ lb. Litharge, in barrels, 6½¢, in kegs, 7¢, $\frac{1}{2}$ lb. Orange Mineral, in barrels, 8½¢ $\frac{1}{2}$ lb. Terms—500 lb and over subject to rebate of ¼¢ $\frac{1}{2}$ lb if paid within 60 days, or less 2½ % additional if paid within 15 days from invoice date.

Zincs.—American Zincs, while not selling to any remarkable extent in other than small quantities, have been rather more active than during the preceding week, quite numerous orders for moderate-sized lots having been received from local and out-of-town buyers. In a general way the position of the market is favorable, and prices remain steady at 41¢, 41¢ and 41¢ respectively for the several grades. Foreign Zincs are firm at the figures given in our price-current and meet with fair sales.

Colors.—Quicksilver Vermilion is somewhat irregular in price, with the basis of 65¢ for bulk generally quoted, but special rates sometimes made where desirable orders may be involved. Trade in the article is only fair. On other Colors there has been no variation to speak of in prices, and for the more staple articles the demand is running very fair, with rather more activity the past week than during the preceding fortnight.

Miscellaneous.—Chalk in bulk has been weak, with \$2.50 an extreme outside price at the present time and \$2 evidently the best that can be obtained for large quantities. Whiting continues irregular in price, although meeting with somewhat better sale in lots of one to five barrels. Paris White barely holds its own in price, but sells in moderate quantities to about the average extent.

Wholesale Prices.

NEW YORK, August 14, 1889.

Animal and Vegetable Oils.

Linseed, City, raw.....	per gal	40	4	--
" " " " " " " " " "	"	63	--	--
" " " " " " " " " "	"	63	--	--
" " " " " " " " " "	"	58	56	59
" " " " " " " " " "	"	55	56	56
" " " " " " " " " "	"	58	54	54
" " " " " " " " " "	"	47	49	49
" " " " " " " " " "	"	42	42	43
" " " " " " " " " "	"	52	53	53
Cotton-seed, Crude, prime.....	"	36	37	37
" " " " " " " " " "	"	30	30	35
" " " " " " " " " "	"	16	45	45
" " " " " " " " " "	"	40	45	45
" " " " " " " " " "	"	63	--	--
" " " " " " " " " "	"	67	68	68
" " " " " " " " " "	"	72	73	73
" " " " " " " " " "	"	74	74	75
" " " " " " " " " "	"	80	--	--
" " " " " " " " " "	"	58	--	--
" " " " " " " " " "	"	46	47	47
" " " " " " " " " "	"	47	48	48
" " " " " " " " " "	"	54	50	50
" " " " " " " " " "	"	49	55	55
" " " " " " " " " "	"	23	24	24
" " " " " " " " " "	"	22	23	23
" " " " " " " " " "	"	27	28	28
" " " " " " " " " "	"	34	--	--
" " " " " " " " " "	"	38	38	38
" " " " " " " " " "	"	60	60	60
" " " " " " " " " "	"	49	--	--
" " " " " " " " " "	"	54	--	--
" " " " " " " " " "	"	62	--	--
" " " " " " " " " "	"	30	30	32
" " " " " " " " " "	"	34	35	35
" " " " " " " " " "	"	36	38	38
" " " " " " " " " "	"	49	5	5
" " " " " " " " " "	"	25	26	27
" " " " " " " " " "	"	28	28	28
" " " " " " " " " "	"	68	--	--
" " " " " " " " " "	"	62	64	75
" " " " " " " " " "	"	54	55	55

Mineral Oils.

Black, 20 gravity, 25 @ 30 cold test, per gal	8	@	9
" " " " " 15 " " " "	8½	@	9½
" " " " " summer.	6	@	7
Cylinder, light, fluted.	15	@	20
" " " " " dark.	14	@	20
" " " " " steam refined.	10	@	18
Paraffine, 23½ @ 24 gravity.	11	@	12
" " " " " 25 " " " "	10	@	11
" " " " " 28 " " " "	8½	@	9
" " " " " red, 21 @ 22 gravity.	12	@	14½
" " " " " 29½ @ 30 " " " "	12	@	13

Paints and Colors.

Barytes, Prime White.....	per ton,	\$21.00	(@)	21.50
" American Refined.....		18.00	(@)	20.00
" " No. 2.....		18.00	(@)	17.00
" " off-color.....		14.00	(@)	15.00
Blue, Celestial.....	per lb.	5 1/2	(@)	7 1/2
" Chinese.....		45	(@)	50
" Prussian.....		20	(@)	35
" Ultramarine.....		7	(@)	25
Brown, Spanish.....		3	1/2	(@)
" Vandyke, American.....		8	(@)	3 1/2
" " English.....		6	(@)	8
Black, American Drop.....		8	(@)	10
" English.....		12	(@)	14
" Frankfurt.....		5	(@)	18
Black, Lamp, common.....		12	(@)	18
" " medium.....		19	(@)	25
" " prime.....		27	(@)	33
Carmine, No. 40, in bulk.....		3.10	(@)	"
" " in boxes or barrels.....		3.20	(@)	"
" " in ounce bottles.....		4.20	(@)	"
Chalk, in bulk.....	per ton.	2.00	(@)	2.50
" " in bbls.....	per 100 lb.	25	(@)	35
China, Clay, English.....	per ton.	13.50	(@)	18
" " Southern.....		10.00	(@)	11.50
Cobalt Oxide, prime.....	lots 100 lb.	2.50	(@)	"
" " black.....		2.60	(@)	"
" " less.....		2.65	(@)	"
Crocus Martius, English.....	per lb.	1 1/2	(@)	2 1/2
" " American.....		1 1/2	(@)	2 1/2
Green, Paris, in bulk.....		20	(@)	"
" " 170 @ 175 lb kegs.....		20 1/2	(@)	"
" " small packages.....		22	(@)	23 1/2
" " Chrome, ordinary.....		8	(@)	11
" " extra.....		12	(@)	13
" " pure.....		22	(@)	25

REBATES, &c.—Paris Green.—Rebates to buyers of 500 to 1000 lb during season, $\frac{1}{4}\%$ & lb; to buyers of 1000 to 2000 lb, 1¢; to buyers of 2000 to 4000 lb, $1\frac{1}{2}\%$; to buyers of 4000 to 10,000 lb, 2¢; to buyers of 10,000 lb and over $2\frac{1}{2}\%$. Buyers of 5 tons or over at one time

Lead, American White, dry.....	6 3/4 @	7
" " in oil.....	7 @	7 1/4
" " Red.....	6 3/4 @	7
Litharge, in barrels.....	6 1/4 @	"
" " 500-lb lots.....	7 @	"
" " smaller ".....	7 1/4 @	"

REBATES, &C.—White Lead. $\frac{1}{2}\%$ $\frac{1}{2}$ $\frac{1}{2}$ rebate on purchases of 500 $\frac{1}{2}$ and over, if paid for within 60 days of date of invoice; terms, 60 days or a discount of $2\frac{1}{2}\%$ if payment within 15 days from date of invoice. Extra rebate of $\frac{1}{2}\%$ $\frac{1}{2}$ $\frac{1}{2}$ payable July 1 and December 31 to buyers of a total of 10 tons pure Lead during the year.

Litharge.—Rebate of $\frac{1}{2}\text{¢}$ \forall lb for cash in 60 days and $2\frac{1}{2}\%$ additional for cash in 15 days.

ber, Rochelle.....	1.35	@	1½
" French Washed.....	1¼	@	2½
" German Washed.....	1¼	@	3
" American.....	½	@	1¼
Orange Mineral, English.....	8½	@	9½
" French.....	9	@	9½
" German.....	8½	@	9½
" American.....	8	@	8½
Paris White, English Cliffstone.....	90	@	1.10
" American.....	70	@	80
Red, Indian, English.....	5¼	@	7
" American.....	2	@	6
" Turkey.....	9	@	14
" Tuscan.....	9	@	11
" Venetian.....	90	@	1.25
" English.....	1.00	@	1.45
Sienna, Italian, Burnt and Powd. # 1	5	@	6½
" Burnt Lumps.....	1¼	@	3½
" Raw, Powdered.....	5	@	6½
" Lumps.....	2	@	3½
" American, Raw and Powdered	1¼	@	1½
" Burnt.....	1¼	@	1½
Talc, French.....	1¼	@	1½
" American.....	1	@	1¼
Terra Alba, French..... per 100 lb	72½	@	80
" English.....	80	@	85
" American No. 1.....	70	@	75
" American No. 2.....	38	@	40
Umber, Turkey, Bnt. and Powd., # 1	3½	@	4
" Burnt, Lumps.....	2½	@	3
" Raw and Powdered.....	3	@	4
" Raw, Lumps.....	2¼	@	2½
" Burnt, American.....	1¼	@	1½
" Raw, ".....	1¼	@	1½

Yellow, Chrome.....	10 @	25
Vermilion, American, Lead.....	11½ @	13
“ Quicksilver.....	65 @	70

"	English Importers	82	85
"	Imitation English	8	25
"	Trieste	75	77
"	Chinese	88	90
Whiting, Common	¥ 100	40	45
"	Gilders	54	55
Zinc, American, do. 100 lbs		14	14
"	French, Red Seal	6½	6
"	Green Seal	7½	6
"	V. M. X.	0	6
"	Antwerp, Red Seal	6½	6
"	Green Seal	7	6
"	German, L. & C.	5½	6
"	V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	9½	10½
"	lots less than 1 ton	9½	10½
"	V. M. in Poppy Oil, Red Seal, lots of 1 ton and over	8½	9
"	lots of less than 1 ton	8½	9¼

DISCOUNTS.—French Zinc.—Discounts to buyers of 10-bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese	35	40
" Prussian	20	45
Ultramarine	12	18
Brown, Vandyke	8	13
Green, Chrome	7	13
Paris	16	18 1/2
Sienna, Raw	7	13
Burnt	7	13
Umber, Raw	7	10
Burnt	7	10

Gue.

Low Grade.....	8	10
Cabinet.....	12	14
Medium White.....	13	15
Extra.....	17	20
French.....	9	20
English.....	10	15
Irish.....	12	15

The Leader Oil-Can.

This article is put on the market by the Binghamton Glass Works, Binghamton, N. Y. The can is of glass and is first covered with a sheet of veneering, which is described as much thicker and of greater resistance than tin, while at the same time lighter and cheaper. It is then covered with a sheet of superior paper, made especially for the purpose, which is afterward coated with a preparation of shellacs and varnishes. This covering is oil-proof, and its durability and appear-



The Leader Oil-Can.

ance are referred to by the manufacturers. The cans are in all cases finished in imitation of oak, although the jacket is susceptible of almost any finish. The manufacturers state that for all ordinary purposes a regular and uniform finish is desirable, and the oak has been found more satisfactory than any other. They emphasize the cheapness of the article, which is sold at \$24 per gross.

Self-Heating Flat-Iron.

The Self-Heating Flat-Iron Company, Cleveland, Ohio, are manufacturing the self-heating flat-iron which is represented



Fig. 1.—Self-Heating Flat-Iron, Ready for Use as an Iron.

in the accompanying engravings, Fig. 1 showing it ready for use as an iron, while Fig. 2 represents it used as a stove. It is the invention of Mr. A. F. Chable, a mem-

ber of the firm. The iron is heated by a perforated cylinder vapor-burner in the inside of the iron. The burner passes through the iron lengthwise and is perforated on the lower or under side its entire length. There are 125 small perfora-



Fig. 2.—Self-Heating Flat-Iron Used as a Stove.

tions, which throw the fire with great force directly on the bottom of the iron, at the same time distributing it so that all parts of the iron are equally and effectually heated. The fire being confined inside the

iron and radiating toward the bottom plate heats the iron from inside and produces a constant and steady heat when in use and no other fire is required. The flame can be regulated to any desired size by simply turning the regulating-screw, thus keeping the heat of the iron constantly under control. The iron is not heavier than the ordinary iron, and the manufacturers claim that it is safe from explosion. It requires from five to eight

minutes to heat it for use, and can, it is stated, be kept hot enough to iron continually. Its economy in use, safety, durability and efficiency of operation are points to which the manufacturers call attention. It is of convenient size, neat in appearance and nickel-plated.

The Canton Glass-Board.

The Canton Saw Company, Canton, Ohio, are putting on the market the glass-board shown in the illustrations herewith. Fig. 1 represents the board with raised border and outer edges and rule in position for cutting at an angle. Fig. 2 shows a section of the rule with holder, by which it is firmly held in position for cutting. The upper or center fastening shown in Fig. 2 cuts even inches and quarters of an inch, while the lower or curved one will cut only eighths of an inch. When lengths are to be cut by eighths it is only necessary to turn over the rule. The utility of the board in cutting window glass into odd shapes and sizes is pointed out by the manufacturers. They also refer to the difficulty experienced in cutting glass by home-made boards, where a slip is liable to occur, and state that this is not possible in the use of their rule. The board is made of seasoned lumber in strips, which are shaped and put together by a new method, the strips being grooved into each other in the form of π . The value of this new method in providing a substantial board and preventing warping is alluded to. The board is made in five sizes—Nos. 1, 2, 3, 4 and 5, which are respectively 24 x 36 inches, 30 x 48 inches, 36 x 54 inches, 42 x 60 inches and 42 x 72 inches. The No. 5 board will be made

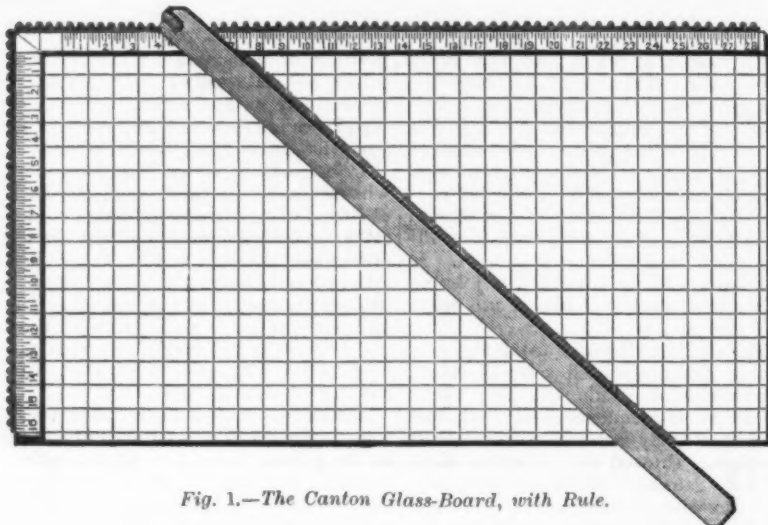


Fig. 1.—The Canton Glass-Board, with Rule.

48 inches wide, if desired, without extra charge. Odd sizes are made to order.

The members of the Scripps League of American workmen were entertained in London on the 8th inst., and United States Minister Lincoln delivered an address in which he said, referring to the prosperity of England and America, that skilled workers in those countries secured blessings that were unknown in

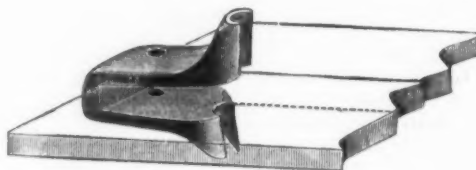


Fig. 2.—Section of Rule, with Holder.

countries in which the populace consisted of soldiers and peasants. He hoped the members of the expedition would derive benefit from their tour of England, through comparing the difference between working life there and in the United States.

Atwater's Pipe-Wrench Jaws.

The accompanying illustration represents in full size the engineers' set of Atwater's Patent Pipe-Wrench Jaws, Nos. 1, 2 and 3, as they are now put up in a black muslin case. They are manufactured by H. W. Atwater, P. O. Box 1452, New York. It will be observed that some slight modifications have been made in the style of the jaws. The circular issued by the manufacturer gives full information in regard to the goods, the sizes of wrench they are adapted to fit and the advantages possessed by them.

New Turn-Buckle.

The superior strength developed by the turn-buckle we herewith illustrate is due mainly to the method pursued in its manufacture. The bar-iron to form the buckle is rolled in a guide-mill and sheared to the

Chicago and Northwestern Railroad Company resulted in the breaking of the stubs, while the buckles remained uninjured. The advantage of the hexagonal turn-buckle is that its shape admits of a good wrench-hold, so that it may be turned no matter what position it may be in, even when the rods jam. Of course an open turn-buckle which gives a view of the rod

process of manufacture as enabling them to put the knife on the market at a comparatively low price.

Important Patent Decision.

A decision confirming the right of an inventor to protect by his several claims,



The Brazil Turn-Buckle.

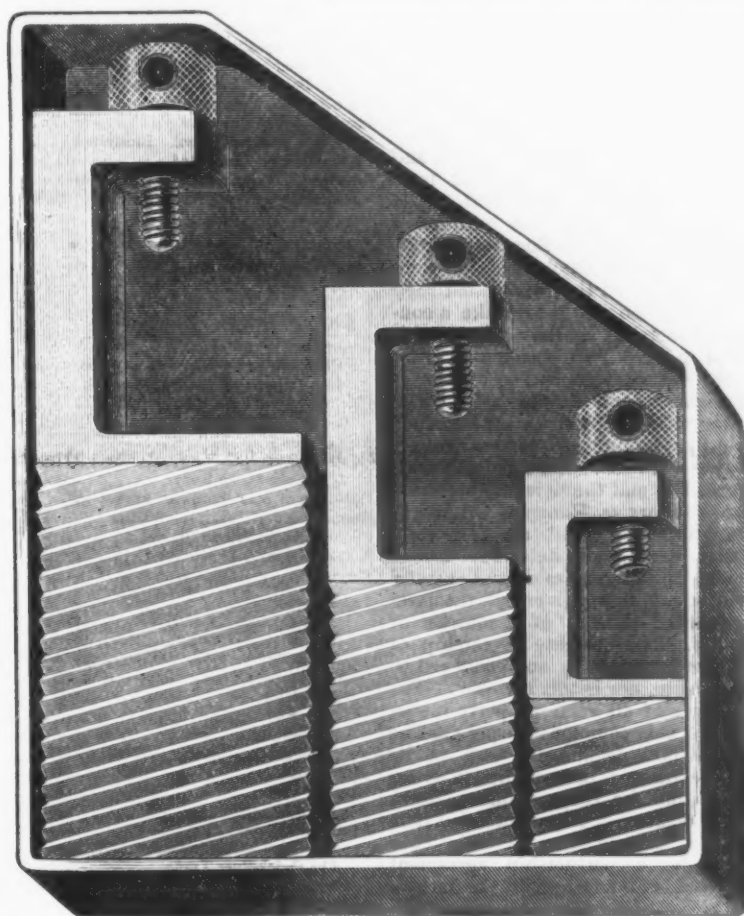
ends, their position and condition, is preferred to a sleeve-nut which does not. These buckles are manufactured by the Central Iron and Steel Company, of Brazil, Ind., for whom Anthony & McElroy, of

in a single patent, a machine, a process and a product was recently given by Assistant Commissioner Fisher. Heretofore the inventor has been compelled to take out three separate and distinct patents in order to cover his machine, process and product, and to pay three fees. In the present case, known as *ex-parte McMahon*, the Assistant Commissioner decides that an applicant is entitled to have his machine, his process and his product protected in a single patent, unless they are so entirely distinct as to constitute absolutely separate and independent inventions—a condition which practically never will arise when a machine and a process have been invented to work together to a single end, as the production of some article of manufacture.

The courts have always held that separate patents were unnecessary except in cases containing wide differences. This was held by the court as early as 1840 and eight years later was reaffirmed by the Supreme Court. But in a case in 1884 Commissioner Butterworth held that a machine, a process and a product were constituted by the Revised Statutes distinct classes of inventions which could not be united in a single patent. Commissioner Hall aimed to establish as a precedent of practice in the office that no patent could issue, with rare exceptions, containing in the one instrument claims for a machine, a process and a product or any two of them. This compelled the inventor to pay two or three fees where one before had been sufficient. The Supreme Court, in an opinion by the late Chief Justice Waite, held that in the case of the Bell telephone the one patent was valid both for the machine and the process it covered. Inventors will recognize the importance of the decision now given by the Assistant Commissioner, which re-establishes the liberal customs of the office in vogue up to within five years ago, and which, moreover, is in accord with the decisions of the courts.

Excellent Results in Testing Copper.

—The Michigan Copper Journal says that the Dollar Bay Smelting Works are now treating all of the Tamarack, Osceola and Kearsarge copper, about 1000 tons a month. It also gives some tests bearing upon the quality of the copper smelted at the works, compared with that produced at the old works, which will be of interest in view



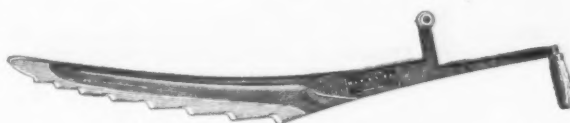
Set of Atwater's Pipe-Wrench Jaws.

proper lengths for the different kinds of buckles made. The slot is punched cold and then the two pieces are placed side by side and raised to a good welding-heat in a regular heating-furnace. They are then rolled on a mandrel through a pair of rolls made specially for the purpose, which thoroughly completes the weld. While the heat is still on they are passed to a machine called a spreader, where the slot is spread open by means of steel blades working up and down. The opening is made at right angles to the plane of the weld, which cannot possibly be injured by the spreading operation. The ends are then reamed and tapped. The buckle at the center has 50 per cent. more metal than the rods received by it. It is evident that the process of making this buckle tends to preserve the original grain of the metal, which, so far from being injured, is in reality improved by the handling. Tests made of these buckles by the Phoenix Iron Company and by the

328 Chestnut street, Philadelphia, are general agents.

Hay-Knife.

The accompanying illustration represents a new pattern of hay-knife put on



G. & M. Nolin's Hay-Knife.

the market by G. & M. Nolin, Skowhegan, Maine. They call attention to the novelty in the arrangement of the handles, the knife being made of the same general shape as the Lightning. They also allude to the

of late discussion. Among the tests, it says, was the hammering out (cold) of a chunk of copper $1\frac{1}{4}$ inches square until it presented a circumference of about 21 inches. The edges when examined did

not show a crack. The sheet thus formed was doubled over and hammered down. Even this operation failed to produce a crack at the point of folding. The piece was doubled a second time, making a quarter section of the first surface, with the same result. A second test was that of bending double a bar of copper 3 inches wide and $\frac{1}{2}$ inch long. No crack was visible at the fold. Tests were made by the rolls, one piece of copper being rolled out to a thickness much less than that of a sheet of thin paper, and with a highly satisfactory result, there being no flaw, crack or weak place in the same. Tests similar to these mentioned were made with brass manufactured from the copper smelted at the works, and with equally satisfactory results. Reports from the rolling-mill, where from 250 to 300 tons of the Tamarack copper per month are used, claim for it that it is as satisfactory a material for working into sheet and wire as that formerly in use.

The Copper Situation.

The copper companies are reported to have entered into a new or amended compact, fixing prices and creating supervision of sales, and the managers of the companies are evidently feeling much more certain regarding the future than they did when self-interest was the only ligature which bound them to a common course, an interest which was liable to be severed any day. At a meeting at the Hotel Brunswick, New York, on the 2d inst., the copper companies decided to continue sales in harmony and appointed a new committee to have charge and apportion sales and fix prices, comprising Messrs. Keyser, of Baltimore, representing Mr. Haggin, of the Anaconda, and other producers of casting copper, except Boston and Montana; Thomas L. Livermore, of Boston, representing the Calumet and Hecla; and John Stanton, of New York, representing the other lake mines. The arrangement was made subject to Mr. Bigelow, of the Tamarack and other mines, securing the approval by the directors of the agreement he entered into, a thing presumably not difficult. The arrangement is said to be that all of the lake copper shall be sold through Messrs. Raht & Co., of New York, and casting brands through somebody to be named by Mr. Keyser, except Boston and Montana product, whose sale is subject to the direction of the Messrs. Baring Bros. The committee are said to have fixed 12 cents as the price of lake copper and 11 cents for casting brands, except those of special grade, which come between the prices. All sales are to be made under the committee's supervision; in a word, a sort of trust arrangement has been formed without many of the objectionable features of the modern trust. Perhaps fuller light may change the story somewhat. Now, if the companies can curtail production (and that would seem possible), their position as sellers of copper would appear relatively much stronger than it has been.

A different view of the situation comes from the mines. A Michigan correspondent says on this subject: "The feeling in the copper district is one of suspense. The mining and moneyed men of the copper country relied on the ability of the Secrétan syndicate to carry its contracts through long after the downfall of the French syndicate had been predicted in New York and Boston financial circles. In consequence of the faith the copper country men had in M. Secrétan and his associates, they lost a great deal of money, and from being optimists to a man on the copper outlook they are now as unanimously pessimistic. They are expecting a break in the price of copper, and the best judges of the market are with them in thinking that prices cannot long be maintained at the

present figure. A drop of 1 cent in the price of copper means the suspension of work at nearly all of the smaller mines, and a drop of 2 cents would close a majority of the mines. The monthly output of mineral from the Calumet and Hecla mills is about 2500 tons. The part of the mine that was closed on account of the fire is now in shape for work, and the monthly production of the Calumet and Hecla could be doubled on four months' notice."

Recent Legal Decisions.

PARTNERSHIP—BY CORPORATIONS.

Four corporations which had been created by the Legislature of Tennessee to manufacture cotton-seed-oil, in 1884 entered into a contract to make a combination by which a committee of one from each mill should manage their four mills for the common benefit of all, the profits and losses to be divided in certain equal proportions. It was also agreed that other corporations might be brought into the combination, and one other corporation was subsequently brought in. The agreement to work together was to continue for one year, to be renewed by common consent for two years longer, and this renewal was actually entered into. The H. Oil Works, one of the four, at the end of the second year was withdrawn from the combination, the Board of Directors having passed a resolution declaring the contract void, on the ground that their corporation had no power to make a contract of partnership, as they claimed this agreement to be. This action of the H. Oil Works was resisted by the officers of the combination, and the possession of its works was withheld by them. Whereupon an action was brought to recover possession of the works, in which the corporation succeeded, and the defendants carried the case—*Mallory vs. Hanane's Oil Works*—to the Supreme Court of Tennessee, where they were again defeated. Judge Larton in the opinion said: "A careful examination of this agreement discloses every essential element of a contract of partnership. The absolute ownership of the corporate property is not conveyed to the partnership, nor is this necessary. The beneficial use of all such property is surrendered to the common purpose. The contract is both technically and in its essential features a partnership, in so far as it is possible for corporations to form such an association. It is contended here that even if this contract is to be construed to be a partnership agreement it is not void, as being beyond the authority of the corporation to enter into. The ground of this contention is that the business of the combination being within the purpose of the charter of the corporation, it is therefore within the power of the corporation to make the contract in question. In other words, that the question is not whether their corporation had, by virtue of the act of incorporation, authority to make the contract, but whether they are by their charter forbidden to do it. In this doctrine we do not concur. There is, however, respectable authority for this position. We hold, indeed we have held before, that a corporation, being an artificial creation, is the very thing it is made by the statute which brings it into being, and nothing more. We do not look to the charter to see whether the thing done be prohibited, but whether there is authority to do it. This is the doctrine laid down by the Supreme Court of the United States and by the general line of decisions."

CONTRACT—LIMITED COMPANY—SIGNATURE.

In the case of *Andrews et al. vs. Youngstown Coke Company, Limited*, it appeared

that a contract was signed by one of the partners in the defendant company, whereby it was agreed that the latter should furnish coke for the plaintiff's furnace from July 10, 1888, to January 1, 1890, at 95 cents per ton. Subsequently the other partners in the company, learning of the contract, repudiated it, and notified the plaintiffs that they would have to pay the market price for coke supplied thereafter. The latter insisted on the fulfillment of the contract, and the company suspended shipments. The plaintiffs thereupon brought a bill in equity, asking that the contract be reformed to the extent of requiring at least two managers of the coke company to sign it. Judge Acheson, sitting in the United States Circuit Court for the Western District of Pennsylvania, dismissed the bill and held that the contract was not binding.

CONTENTS.

Grinding-Machine. Illustrated.....	235
The New American Navy.....	235
The Paris Exposition.....	236
New Method of Handling Steel Ingots. Illus.....	237
Rolling Bars and Rails from Molten Metal. Illus.....	238
Blast-Furnace Management.....	240
Poor's Railroad Statistics.....	241
MacCoy's Pneumatic Tool. Illustrated.....	242
Planer-Chuck. Illustrated.....	243
Steel-Armored Acid Conduit. Illustrated.....	243
Machine for Screwing Pipes Together. Illus.....	243
The Week.....	244
Manufacturing:	
Iron and Steel.....	245
Machinery.....	246
Miscellaneous.....	246
A Curious Chemical.....	246
Editorials:	
Chemical Analysis of Foundry Mixtures.....	247
Iron Imports for the Half-Year.....	247
The Demand for Heavy Rails.....	248
Effect of Foreign Patents on United States Patents.....	248
Our Trade with Venezuela.....	248
The Coke Strike Ended.....	248
Condition of Blast-Furnaces August 1.....	249
Obituary.....	250
Fluctuations in British Prices.....	250
A French Tin-Plate Works.....	250
Personal.....	251
Trade Report:	
Chicago.....	252
St. Louis.....	253
Louisville.....	253
Chattanooga.....	253
Philadelphia.....	253
Cleveland.....	254
Pittsburgh.....	254
Cincinnati.....	255
Detroit.....	255
New York.....	255
Financial.....	256
Metal Market.....	257
New York Metal Exchange.....	257
The Quicksilver Trade.....	257
Imports.....	257
Coal Market.....	257
British Iron and Metal Markets.....	257
Foreign Markets.....	258
Hardware:	
Cut Nails.....	259
Miscellaneous Prices.....	259
Export Trade.....	259
A New Wire-Nail Card.....	259
Trade Topics.....	260
Obituary.....	260
Business Changes.....	260
Items.....	261
Artistic Trade Literature.....	261
Huntington-Hopkins Company.....	261
Exports.....	262
Review of the Wholesale Market in Paints and Oils:	
Animal and Vegetable Oils.....	262
Paints and Colors.....	263
Wholesale Prices.....	263
The Leader Oil-Can. Illustrated.....	264
Self-Heating Flat-Iron. Illustrated.....	264
The Canton Glass-Board. Illustrated.....	264
Atwater's Pipe-Wrench Jaws. Illustrated.....	265
New Turn-Buckle Illustrated.....	265
Hay-Knife. Illustrated.....	265
Important Patent Decision.....	265
Excellent Results in Testing Copper.....	265
The Copper Situation.....	266
Recent Legal Decisions.....	266
Current Hardware Prices.....	267
Current Metal Prices.....	272
Classified List of Advertisers.....	89
Alphabetical Index to Advertisers.....	92

CURRENT HARDWARE PRICES.

AUGUST 14, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers' name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Ammunition.—

Caps, Percussion, No. 1000—

Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimm'd Edge, 1-10's.....46@48¢
E. B. Grad. Edge, Cent. Fire, 1-10's.....46@47¢

Musket Waterproof, 1-10's.....36¢
S. B. Genuine Imported.....35¢
Eley's E. B.....54¢@55¢
Eley's D Waterproof, Central Fire.....\$1.60

Cartridges.

Rim Fire Cartridges.....50¢5&2¢
Rim Fire Military.....15¢2¢
Cent. Fire, Pistol and Rifle.....25¢5&2¢
Cent. Fire, Military and Sporting.....15¢2¢
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., \$1.75.....2¢
Blank Cartridges, 32 cal., \$3.50.....2¢
Primed Shells and Bullets.....15¢5&2¢
B. B. Caps, Round Ball.....2¢
B. B. Caps, Con. Ball, Swg'd., \$2.00.....2¢

Primers.

Berdan Primers, \$1.00.....2¢
B. L. Caps (for Sturtevant Shells) \$1.00.....2¢
All other Primers, \$1.20.....2¢

Shells.

First quality, 4, 8, 10 and 12 gauge.....25¢10&2¢
First quality, 14, 16 and 20 gauge (\$10 list).....30¢10&2¢
Club, Rival and Climax brands.....20¢10&2¢
Selbold's Comb. Shot Shells.....15¢2¢
Brass Shot Shells, 1st quality.....60¢2¢
Brass Shot Shells, Club, Rival, Climax.....65¢2¢
I X L, 10 and 12 gauge.....40¢5&2¢
"Special," 16 gauge.....30¢10&5¢
"Special," 10 and 12 gauge.....40¢10&2¢
Fowler's Pat.....\$3.25

Shells Loaded—

Standard. List.....40¢10&40¢10&10¢
Wads—
U. M. C. & W. R. A.—B. E., 11 up.....\$2.00
U. M. C. & W. R. A.—B. E., 9&10.....2.30
U. M. C. & W. R. A.—B. E., 7&8.....2.60
U. M. C. & W. R. A.—P. E., 11 up.....3.10
U. M. C. & W. R. A.—P. E., 9&10.....4.00
U. M. C. & W. R. A.—P. E., 7&8.....4.90
Eley's B. E., 11 up.....\$1.75
Eley's P. E., 11 up.....2.80

Anvils.

Eagle Anvils, 10¢.....20¢@20¢5¢
Peter Wright's.....9¢
Armstrong's Mouse Hole.....8¢
Armstrong's Mouse Hole, Extra.....11¢@11¢5¢
Trenton.....9¢@9¢5¢
Wilkinson's.....9¢@10¢
J. & Riley Carr, Pat. Solid.....11¢@11¢5¢
Moore & Barnes Mfg. Co.....33¢5¢

Anvil Vise and Drill—

Millers Falls Co., \$18.00.....20¢
Cheney Anvil and Vise.....25¢
Allen Anvil and Vise.....40¢10¢

Apple Parers—

Advance.....\$ doz \$4.75
Antrim Combination.....\$ doz 5.50
Baldwin.....\$ doz 5.25
Champion.....\$ doz 7.25
Daisy.....\$ doz 7.25
Eureka, 1888.....each 17.00
Family Bay State.....\$ doz 12.00
Favorite.....\$ doz 5.00
Gem.....\$ doz 4.00
Gold Medal.....\$ doz 4.00
Ideal.....\$ doz 30.00
Improved Bay State.....\$ doz 4.50
Little Star.....\$ doz 13.50
Monarch.....\$ doz 5.50
New Lightning.....\$ doz 4.00
Oriole.....\$ doz 4.00
Penn.....\$ doz 4.00
Perfect 10.....\$ doz 4.00
Pomona.....\$ doz 6.00
Rocking Table.....\$ doz 4.50
Turntable.....\$ doz 13.50
Victor.....\$ doz 4.00
Waverly.....\$ doz 4.50
White Mountain.....\$ doz 4.25
72.....\$ doz 5.75
78.....\$ doz 6.50

Augers and Bits—

Douglas Mfg. Co.....70¢
Wm. A. Ives & Co.....70¢
Humphreysville Mfg. Co.....70¢
French, Swift & Co. (F. H. Beecher, Rockford Bit Company)
Cook's, Douglas Mfg. Co.....55¢
Ives' Circular Lip.....60¢
Patent Solid Head.....30¢
C. E. Jennings & Co., No. 10, extension lip.....40¢
C. E. Jennings & Co., No. 30.....60¢
C. E. Jennings & Co. Auger Bits, W set, 32 1/2 quaters, No. 5, \$5; No. 30, \$3.50, 20¢
Lewis' Patent Single Twist.....45¢
Jennings' Augers and Bits.....25¢
Imitation Jennings' Bits.....60¢@60¢5¢
Pugh's Black.....30¢
Rockford, Jennings' Pattern.....40¢
Car Bits.....50¢10¢@60¢
L Hommedieu Car Bits.....15¢10¢
Forstner Pat. Auger Bits.....10¢

Hollow Augers—

Ives' French, Swift & Co.....33¢@33¢10¢
Douglass' Adjustable, \$ doz \$48.....40¢10¢
Ives' Expansive, each \$4.50.....50¢5¢
Universal Expansive, each \$4.50.....20¢
Wood's.....25¢25¢10¢

Expansive Bits—

Clark's small, \$18; large, \$26.....85¢@35¢5¢
Ives' No. 4, \$ doz \$60.....40¢
Swan's.....40¢
Steer's, No. 1, \$20; No. 2, \$22.....35¢
Stearns' No. 2, \$48.....20¢

Gimlet Bits—

Common.....\$ gross \$2.75@3.25
Diamond.....\$ doz \$1.10.....35¢10¢
Bee.....35¢@35¢5¢
Double Cut, Shephardson's.....45¢@45¢10¢
Double Cut, Ct. Valley Mfg. Co.....30¢10¢
Double Cut, Hartwell's, \$ gro.....85¢25¢
Double Cut, Douglass.....40¢10¢
Double Cut, Ives.....60¢@60¢10¢

Bit Stock Drills—

Morse Twist Drills.....50¢10¢5¢
Standard.....50¢10¢5¢
Cleveland.....50¢10¢5¢
Syracuse, for metal.....50¢10¢
Syracuse, for wood (wood list).....30¢@30¢5¢
Williams' or Holt's, for metal.....50¢10¢5¢
Williams' or Holt's, for wood.....40¢10¢

Ship Augers and Bits—

L'Hommedieu's.....15¢10¢@15¢10¢5¢
Watrous.....15¢10¢@15¢10¢5¢
Snell's.....15¢10¢@15¢10¢5¢
Snell's Ship Auger Pat'n Car Bits.....15¢10¢@15¢10¢5¢

Awl Hafts—

Sewing, Brass Fer. \$ gr \$3.50.....45¢10¢
Pat. Sewing, Short \$1.00 \$ doz.....40¢10¢
Pat. Sewing, Long.....\$ doz \$1.20
Pat. Peg, Plain Top, \$ gr \$10.00.....45¢10¢
Pat. Peg, Leather Top, \$ gr \$12.00.....45¢10¢

Awls, Brad Sets, &c—

Awls, Sewing, Common \$ gr \$1.70, 35¢
Awls, Should. Peg \$ gr \$2.45, 40¢@40¢10¢
Awls, Pat. Peg.....\$ gr 63¢.....40¢@40¢10¢
Awls, Shouldered Brad, 2.70 \$ gr.....35¢
Awls, Handled Brad.....\$7.50 \$ gr.....45¢
Awls, Handled Scratch \$ gr \$7.50, 35¢10¢
Awls, Socket Scratch, \$ doz, \$1.50, 25¢@30¢

Awl and Tool Sets—

Alken's Sets, Awls and Tools, No. 20, \$ doz \$10.00.....55¢10¢
Pray's Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$8.....25¢@25¢10¢
Miller's Falls Adj. Tool Hds., Nos. 1, \$12; 2, \$18.....25¢
Henry's Combination Haft.....\$ doz \$6.50
Brad Sets, No. 42, \$10.50; No. 43, \$12.50, 70¢10¢5¢
Stanley's Excelsior, No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50.....30¢10¢

Axes—

Makers' and Special Brands—

First quality.....\$ doz \$6.00@6.50
Others.....\$ doz \$5.50@5.75

Axle Grease—

Fraser's.....Keg \$ 4¢, Pail \$ 5¢
Fraser's, in boxes.....\$ gr \$0.50
Dixon's Everlasting, in box, \$ doz 1¢.....\$1.20; 2¢ \$2.00
Dixon's Everlasting.....10¢ pails, ea. 8¢
Lower grades, special brands, \$ gr \$5.50@7.00

Axles—

No. 1.....4¢@4¢5¢, No. 2 5¢@5¢5¢
Nos. 7 to 14.....55¢5¢
Nos. 15 to 18.....47¢5¢
Nos. 19 to 22.....47¢5¢
National Tubular Self-Oiling Standard Farm (1 to 5) and Special Farm (A1 to A5):
Less than 10 sets.....33¢5¢
Over 10 sets.....33¢5¢

Bag Holders—

Sprengle's Pat.....\$ doz \$18.....60¢

Balances—

Spring Balances.....50¢
Common 24".....\$ doz \$1.50.....50¢
Chattillon's Spring Balances.....50¢
Chattillon's Circular Spring Balances.....60¢

Bells—

Hand—

Light Brass.....70¢10¢ @ 75¢
Extra Heavy.....90¢10¢
White Metal.....90¢10¢10¢
Silver Chime.....33¢10¢
Globe (Cone's Patent).....25¢10¢@35¢

Door—

Gong, Abbe's.....33¢@10¢
Gong, Yankee.....45¢10¢
Gong, Barton's.....40¢10¢50¢
Crank, Taylor's.....25¢10¢
Crank Brooks.....50¢10¢2¢
Crank, Cone's.....10¢

Crank, Cone's.....30¢10¢
Lever, Sargent's.....60¢10¢
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....25¢10¢
Lever, R. E. M. Co.'s.....50¢10¢2¢
Pull, Brook's.....50¢10¢2¢
Pull, Western.....25¢10¢

Cow—

Common Wrought.....60¢10¢
Western.....20¢10¢
Western, Sargent's list.....70¢10¢
Kentucky, Sargent's list.....70¢10¢
Dodge, Genuine Kentucky.....70¢70¢10¢
Texas Star.....50¢10¢50¢10¢5¢
Call.....40¢@40¢5¢
Farm Bells.....\$ 3¢@3¢5¢
Steel Alloy Church and School Bells.....40¢

Bellows—

Blacksmiths'.....60¢@60¢5¢
Molders'.....40¢10¢10¢
Hand Bellows.....40¢10¢@50¢

Belted, Rubber—

Common Standard.....70¢10¢
Standard.....70¢70¢5¢
Extra.....60¢5¢@60¢10¢
N. Y. B. & P. Co., Carbon.....60¢10¢5¢
N. Y. B. & P. Co., Diamond.....50¢10¢

Bench Stops—

Morrill's.....\$ doz \$9, 50¢
Hotchkiss's.....\$ doz \$5, 10¢10¢10¢
Weston's, No. 1, \$10; No. 2, \$9.25@10¢5¢
McGill's.....\$ doz \$3.....10¢

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—

Extension, Barber's, \$ doz \$15.00.....40¢@40¢10¢
Ives, \$ doz \$20.00.....60¢5¢@60¢10¢
Diagonal.....\$ doz \$24.00, 40¢
Angular.....\$ doz \$24.00, 40¢5¢

Blind Adjusters—

Domestic.....\$ doz \$3.00, 33¢5¢
Excelsior.....\$ doz \$10.00.....50¢10¢2¢
Washburn's Self-Locking.....20¢@20¢10¢

Blind Fasteners.

Mackrell's, \$ doz, \$1.00.....20¢@20¢10¢
Van Sand's Screw Pat., \$15 \$ gr.....60¢10¢
Van Sand's Old Pat., \$15.00 \$ gr.....55¢10¢
Washburn's Old Pattern, \$ gr.....\$9.00
Merriman's.....\$ doz \$1.00
Austin & Eddy No. 2008, \$ gr.....\$9.00
Security Gravity, \$ gr.....\$9.00

Blind Staples—

Barbed, 1/2 in. and larger.....\$ 7¢@8¢
Barbed, 3/4 in.....\$ 8¢@9¢

Blocks—

Ordinary Tackle, list May 20, 1880.....40¢10¢50¢
Cleveland Block Co., Mal. Iron.....50¢
Moore's Novelty, Mal. Iron.....50¢

Bolts—

Door and Shutter—

Cast Iron Barrel, Square, &c.....70¢@70¢10¢
Cast Iron Shutter Bolts.....70¢@70¢10¢
Cast Iron Chain (Sargent's list).....65¢10¢
Ives' Patent Door Bolts.....60¢
Wrought Barrel.....70¢@70¢10¢
Wrought Square.....70¢@70¢10¢
Wrt Shutter, all Iron, Stanley's.....60¢10¢
Wrt Shutter, Brass Knob.....40¢10¢
Wrt Shutter, Sargent's list.....60¢10¢
Wrt Sunk Flush, Sargent's list.....55¢10¢
Wrt Sunk Flush, Stanley's list.....50¢10¢
Wrt B.K. Flush, Com'n.....55¢10¢

Carriage, Machine, &c.—

Com. list June 10, '84.....75¢10¢2¢
Genuine Eagle, list Oct. '84.....75¢10¢80¢
Phila. pattern, list Oct. 7, '84.....80¢@80¢10¢
R.B. & W., old list.....70¢
Machine, according to size.....80¢@80¢5¢
Bolt Ends, according to size.....80¢@80¢5¢

Tire—

Common, list Feb. 28, '83.....70¢
Port Chester Bolt and Nut Company:
Empire, list Feb. 28, '83.....70¢
Phila., list Oct. '84.....82¢5¢
Keystone, Philadel., list Oct. '84.....80¢
Norway, Phila., list Oct. '84.....75¢10¢
American Screw Company:
Norway, Phila., list Oct. 16, '84.....75¢10¢
Eagle, Phila., list Oct. 16, '84.....80¢
Phila., list Oct. 16, '84.....82¢5¢
R.B. & W., Philadel., list Oct. 16, '84.....82¢5¢

Stone and Plow—

Stone.....65¢
Plow.....60¢5¢
R. B. & W., Plow.....55¢

Borax—

Without.....\$ 9¢@10¢5¢

Boring Machines—

Without Augers. Upright, Angular.
Douglas.....\$5.50 \$6.75.....50¢
Snell's, Rice's Pat. 5.50 6.75.....40¢10¢10¢
Jennings.....5.50 6.75.....45¢@45¢10¢
Other Machines.....2.35 2.75.....net
Phillips' Patent with augers.....00 7.50.....

Bow Pins—

Humason, Beckley & Co.'s.....80¢10¢
Sargent & Co.'s.....\$17 and \$18.....60¢10¢
Peck, Stow & W. Co. 50¢10¢50¢10¢5¢

Braces—

Barber's, Nos. 10 to 16.....50¢
Nos. 30 to 33.....50¢
Nos. 40 to 63.....50¢10¢
Barker's, Nos. 8, 10 and 12.....75¢10¢@80¢
Plated, Nos. 8, 10 and 12.....65¢10¢70¢
Osgood's Ratchet.....40¢10¢50¢
Spofford's.....50¢5¢@50¢10¢
Ives' New Haven Novelty.....70¢70¢5¢
New Haven Ratchet.....60¢5¢@60¢10¢
Barber Ratchet.....60¢5¢@60¢10¢
Barbers.....60¢5¢
Spofford.....60¢5¢@60¢10¢
Common Ball, American.....\$1.00@1.10
Bartholomew's, Nos. 25, 27 and 30.....50¢10¢@60¢5¢
Nos. 117, 118, 119.....70¢@70¢5¢
Amidon's Barker's Imp'd Plain.....75¢10¢@80¢
Barker's Imp. Nickel.....65¢10¢70¢
Ratchet.....75¢10¢@80¢
Eclipse Ratchet.....40¢@40¢10¢
Globe Jawed.....40¢@40¢10¢
Corner Brace.....40¢@40¢10¢
Universal, 8 in., \$2.10 10 in., \$2.25
Buffalo Ball.....\$1.10@1.15
P. S. & W.....50¢10¢

Brackets—

Shelf plain, Sargent's list, 55¢10¢@55¢10¢10¢
Shelf, fancy, Sargent's list, 60¢10¢@60¢10¢10¢
Reading, plain.....50¢10¢@60¢10¢5¢
Reading, Rosette.....60¢10¢@60¢10¢10¢

Bright Wire Goods—

87¢

Broilers—

Hens' Self-Inch.....9 10 9x11
Basting, 1/2 Per doz.....\$4.50 5.50 6.50

Buckets—See Well Buckets and Pails.

Bull Rings—

Union Co. Nut.....55¢
Sargent's.....60¢@10¢70¢5¢
Hotchkiss' low list.....30¢
Humason, Beckley & Co.'s.....70¢
Peck, Stow & W. Co.'s.....50¢10¢50¢10¢10¢
Ellrich Hdw. Co., White Metal, low list.....50¢50¢10¢

Butcher's Cleavers—

Bradley's.....25¢@30¢
L. & J. White.....25¢5¢
Beatty's.....40¢@40¢5¢
New Haven Edge Tool Co.'s.....40¢
P. S. & W.....33¢5¢@33¢10¢
Foster Bros.....30¢
Schulte, Lohoff & Co.....40¢@40¢5¢

Butts—

Brass—

Wrought Brass.....75¢@75¢10¢
Cast Brass, Tiebout's.....33¢5¢
Cast Brass, Corbin's, Fast.....33¢5¢10¢
Cast Brass, Loose Joint.....33¢5¢10¢

Cast Iron—

Fast Joint, Narrow.....50¢10¢5¢@60¢5¢
Fast Joint, Broad.....55¢10¢5¢@60¢10¢
Loose Joint.....70¢10¢
Loose Joint, Japanned.....70¢10¢
Loose Joint, Jap. with Acorns.....70¢10¢
Parliament Butts.....70¢10¢
Mayer's Hinges.....75¢
Loose Pin, Acorns.....70¢10¢
Loose Pin, Acorns, Japanned.....70¢10¢
Loose Pin, Acorns, Japanned, Plated Tips.....70¢10¢

Wrought Steel—

Fast Joint, Narrow.....70¢10¢
Fast Joint, Lt. Narrow.....70¢10¢
Fast Joint, Broad.....70¢10¢
Table Butts, Back Flaps, &c.....70¢10¢
Inside Blind, Regular.....70¢10¢
Inside Blind, Light.....70¢10¢
Loose Pin.....70¢10¢
Bronzed Wrought Butts.....50¢

Calipers—

See Compasses.

Calks, Toe—

Gautier.....\$ 5¢@6¢
Dewicks (Burke).....\$ 5¢@6¢

Can Openers—

Messenger's Comet.....\$ doz \$3.00, 25¢
American.....\$ gross \$3.00
Duplex.....\$ doz 25¢, 15¢@20¢
Lyman's.....\$ doz \$3.75, 20¢
No. 4 French.....\$ doz \$2.25, 55¢@60¢
No. 5, Iron Handle.....\$ gr \$6.00, 45¢@50¢
Eureka.....\$ doz \$2.50, 10¢
Sardine Scissors.....\$ doz \$2.75@3.25
Star.....\$ doz \$2.75
Sprague, No. 1, \$2.00; 2, \$2.25; 3, \$2.50
50¢10¢10¢
World's Best, \$ gross, No. 1, \$12.00
No. 2, \$24.00; No. 3, \$36.00.....50¢10¢
Universal, \$ doz \$3.00.....35¢5¢
Domestic.....\$ doz \$2.50.....45¢
Champion \$ doz \$2.00.....5¢

Cocks and Curry.....10¢10¢10¢10¢10¢	
Cotton.....10¢10¢10¢	
Wool.....10¢10¢10¢	
Carpet Stretchers—	
Cast Steel, Polished.....	1/2 doz \$2.25
Cast Iron, Steel Points.....	1/2 doz \$2.00
Socket.....	1/2 doz \$1.75
Ballard's.....	25¢25¢10¢
Carpet Sweepers—	
Bissell No. 5.....	1/2 doz \$17.00
Bissell No. 7 New Drop Pan.....	1/2 doz \$19.00
Bissell, Grand.....	1/2 doz \$36.00
Grand Rapids.....	1/2 doz \$24.00
Crown Jewel, No. 1.....	1/2 doz \$18.00
No. 2.....	1/2 doz \$18.00
No. 3.....	1/2 doz \$18.00
No. 4.....	1/2 doz \$17.00
Magie.....	
Improved Parlor Queen.....	1/2 doz \$27.00
Nickel.....	1/2 doz \$24.00
Japan.....	1/2 doz \$22.00
Excelior.....	1/2 doz \$18.00
Garland.....	1/2 doz \$24.00
Parlor Queen.....	1/2 doz \$15.00
Housewife's Delight.....	1/2 doz \$16.00
Queen.....	1/2 doz \$18.00
Queen, with band.....	1/2 doz \$30.00
King.....	1/2 doz \$18.00
Weed, Improved.....	1/2 doz \$16.00
Hub.....	1/2 doz \$16.00
Cog Wheel.....	1/2 doz \$22.00
Conqueror.....	1/2 doz \$22.00
Easy.....	1/2 doz \$22.00
Monarch.....	1/2 doz \$21.00
Goshen.....	1/2 doz \$18.00
Advance.....	1/2 doz \$15.00
Ladies' Friend, No. 1.....	1/2 doz \$15.00
No. 2.....	1/2 doz \$15.00
American.....	1/2 doz \$15.00
Grand Republic.....	1/2 doz \$35.00
Cartridges—	
See Ammunition.	
Casters—	
Bed.....	Brass.....55¢55¢10¢
Plate.....	Others.....60¢60¢10¢
Shallow Socket.....	40¢10¢
Deep Socket.....	40¢10¢
Yale Casters, list May, 1884.....	30¢10¢40¢
Yale, Gem.....	60¢60¢5¢
Martin's Patent (Phoenix).....	45¢10¢50¢
Payson's Anti-friction.....	60¢60¢10¢
Giant Truck Casters.....	80¢
Stationary Truck Casters.....	50¢10¢
Socket Truck Casters.....	50¢
Cattle Leaders—	
Humason, Beckley & Co.'s.....	70¢
Sargent's.....	60¢8¢10¢
Hotchkiss.....	30¢
Peck, Stow & W. Co.....	50¢10¢
Chain—	
Trace, 6 1/2-10-2, exact.....	50¢10¢50¢10¢5¢
Trace, 6 1/2-10-3, exact.....	50¢10¢50¢10¢5¢
Trace, 7-10-2, exact.....	50¢10¢50¢10¢5¢
NOTE.—Traces "Regular" sizes, 3¢ net	
Log, Fifth, Stretcher, and other fancy	
Chains, list Nov. 1, 1884.....	50¢10¢50¢10¢5¢
American Coll, in cask lots.....	3 1/2 5 1/2 7 1/2 8 1/2 9 1/2 10 1/2
8 1/2 5 1/2 5 00 4 00 3 70 3 60 3 50 3 40	
Less than cask lots, add 1/4¢ per lb.	
German Coll, list of June 20, 1887.....	50¢10¢50¢60¢
German Halter Chain, list of June 20, 1887.....	50¢10¢50¢60¢
Covert Halter.....	35¢2¢
Covert Traces.....	35¢2¢
Onida Halter Chain.....	60¢60¢5¢
Galvanized Pump Chain.....	75¢75¢5¢
Jack Chain, Iron.....	75¢75¢5¢
Jack Chain, Brass.....	70¢70¢5¢
Chalk—	
White.....	1/2 gr 50¢
Red.....	1/2 gr 70¢
Blue.....	1/2 gr 85¢
See also Crayons.	
Chalk Lines—	
See Lines.	
Chisels—	
Socket Framing and Firmer.	
P. S. & W.....	75¢10¢ 75¢
New Haven.....	10¢5¢
Wetherby.....	75¢10¢ 75¢
Mix.....	10¢5¢
Ohio Tool Co.....	75¢75¢5¢
Douglas.....	75¢75¢5¢
Buck Bros.....	80¢10¢60¢10¢5¢
Merrill.....	80¢10¢60¢10¢5¢
L. & J. J. White.....	30¢30¢5¢
Tanged and Miscellaneous.	
Tanged Firmer.....	40¢10¢50¢
Butcher's.....	44.75¢\$5.00
Spear & Jackson's.....	85¢ to 2
Buck Bros.....	30¢
Cold Chisels.....	16¢10¢
Chucks—	
Beach Pat.....	each, \$8.00.....20¢
Morse's Adjustable, each.....	\$7.00, 20¢20¢5¢
Danbury.....	each, \$6.00, 30¢30¢5¢
Syracuse.....	each, \$6.00, 30¢30¢5¢
Skinner's Pat. Drill Chucks.....	25¢
Skinner's Independent Lathe Chucks.....	40¢
Skinner's Pat. Comb. Chuck.....	40¢
Clamps—	
A. I. Tool Co.'s Wrought Iron.....	25¢
Adjustable, Gray's.....	20¢
Adjustable, Lambert's.....	20¢
Adjustable, Snow's.....	40¢5¢
Adjustable, Hammers.....	15¢
Adjustable, Stearns.....	20¢10¢
Stearns' Adjustable Cabinet and Cor-	
ner.....	20¢10¢
Cabinet, Sargent's.....	60¢8¢10¢
Carriage Makers' Sargent's.....	70¢10¢
Eberhard Mfg. Co.....	40¢10¢40¢10¢
Warner's.....	40¢10¢40¢10¢5¢
Saw Clamps, see Vises	
Clips—	
Norway Axle, 1/2 & 5-16.....	55¢55¢5¢
2nd grade Norway Axle, 1/2 & 5-16.....	65¢5¢
Superior Axle Clips.....	60¢8¢5¢70¢
Norway Spring Bar Clips, 5-16.....	60¢5¢5¢
Wrought-iron Felloe Clips.....	1/2 doz, 5¢
Steel Felloe Clips.....	1/2 doz, 5¢
Baker Axle Clips.....	25¢
Cockeyes.....	
50¢	
Cocks, Brass.	
Hardware list.....	
50¢25¢	
Coffee Mills—	
Box and Side, list Jan. 1, 1888.....	60¢25¢
American, Enterprise Mfg Co.....	20¢10¢30¢
The Swift, Lane Bros.....	20¢10¢
Compasses Dividers, &c—	
Compasses, Calipers, Dividers.....	70¢70¢10¢
Bemis & Call Co.'s.....	60¢5¢
Dividers.....	50¢5¢
Compasses & Calipers.....	50¢5¢
Wing and Inside or Outside.....	50¢5¢
Double.....	60¢
(Call's Pat. Inside).....	30¢
Excelior.....	50¢
Starrett's.....	25¢10¢
J. Stevens & Co.'s.....	25¢10¢
Spring Calipers and Dividers.....	25¢10¢10¢
Lock Calipers and Dividers.....	25¢10¢
Combination Dividers.....	25¢10¢
Coopers' Tools—	
Bradley's.....	20¢
Barton's.....	20¢20¢5¢
L. & J. J. White.....	20¢5¢
Albertson Mfg. Co.....	30¢
Beatty's.....	30¢
Sandusky Tool Co.....	30¢30¢5¢
Corkscrews—	
Humason & Beckley Mfg. Co.....	40¢40¢10¢
Clough's Pat.....	33¢33¢5¢
Howe Bros & Hulbert.....	35¢
Cork Knives and Cutters—	
Bradley's.....	10¢
Wadsworth's.....	25¢
Cradles—	
Grain.....	50¢25¢
Crayons.	
White Crayons, 1/2 gr 12¢12¢5¢.....	10¢
D. M. Stewart Mfg. Co., Metal Work.....	25¢
P. M. Stewart Mfg. Co., Rolling Mill.....	25¢
See also Chalk.	
Crow Bars—	
Cast Steel.....	1/2 doz, 5¢
Iron, Steel Points.....	1/2 doz, 35¢
Curry Combs—	
Fitch's.....	50¢10¢50¢10¢10¢
Rubber per doz \$10.00.....	20¢
Perfect.....	50¢
Curtain Pins—	
Silvered Glass.....	net
White Enamel.....	net
Cutlery—	
Weaver Falls & Booth's.....	33¢
Wostenholme.....	\$7.75 to 2
Dampers, &c—	
Dampers, Buffalo.....	40¢10¢
Buffalo Damper Clips.....	40¢10¢
Crown Damper.....	40¢
Excelior.....	40¢10¢
Dividers—	
See Compasses.	
Dog Collars—	
Embossed, Gilt, Pope & Steven's list.....	30¢10¢
Leather, Pope & Steven's list.....	40¢
Brass, Pope & Steven's list.....	40¢
Door Springs—	
Torrey's Rod, regular size.....	1/2 doz \$1.30
Gray's.....	1/2 gr, \$20.00.....20¢
Bee Rod 1/2 gr, \$20.00.....	20¢
Warner's No. 1, 1/2 doz, \$25.00; No. 2.....	\$3.30
Gem (Coll), list April 18, 1888.....	10¢
Star (Coll), list April 19, 1888.....	30¢
Victor (Coll).....	60¢60¢10¢
Champion (Coll).....	60¢10¢60¢10¢10¢
Philadelphia, 5 in., \$5.00; 8 in., \$7.75.....	5
Covell's.....	No. 1, 1/2 doz, \$18.00; No. 2.....
15.00.....	50¢
Rubber, complete, 1/2 doz, \$4.50.....	55¢10¢
Hercules.....	each \$2.50.....50¢
Shaw Door Check and Spring.....	25¢30¢35¢
Drawing Knives—	
Wetherby.....	75¢10¢ 75¢10¢
P. S. & W.....	85¢
New Haven.....	60¢10¢60¢10¢5¢
Merrill.....	60¢10¢60¢10¢5¢
Douglas.....	75¢75¢5¢
Watrous.....	75¢10¢25¢
L. & J. J. White.....	20¢5¢
Bradley's.....	35¢
Adjustable Handle.....	25¢35¢5¢
Wilkinson's Folding.....	25¢25¢5¢
Drills and Drill Stocks—	
Blacksmiths'.....	each \$1.75
Blacksmiths' Self-Feeding, each.....	\$7.50, 20¢
Breast, P. S. & W.....	40¢10¢
Breast, Wilson's.....	30¢5¢
Breast, Milners'.....	each \$3.00, 25¢
Breast, Bartholomew's.....	each \$2.50.....25¢10¢40¢
Ratchet, Merrill's.....	20¢20¢5¢
Ratchet, Ingersoll's.....	25¢
Ratchet, Parker's.....	20¢20¢5¢
Ratchet, Whitney's.....	20¢10¢
Ratchet, Moore's Triple Action.....	25¢30¢
Ratchet, Curtis & Curtis.....	30¢
Whitney's Hand Drill, Plain, \$11.00.....	Adjustable, \$12.00.....20¢10¢
Wilson's Drill Stocks.....	10¢
Automatic Boring Tools.....	\$1.75¢\$1.85
Twist Drills—	
Morse.....	50¢10¢5¢
Standard.....	50¢10¢5¢
Syracuse (Metal list).....	50¢10¢
Cleveland.....	50¢10¢5¢
Williams.....	50¢10¢10¢
New Process.....	50¢10¢5¢
Drill Bits.—See Augers and Bits	
Drill Chucks.—See Chucks.	
Dripping Pans—	
Small sizes.....	1/2 doz, 6¢4¢
Large sizes.....	1/2 doz, 6¢4¢
Egg Beaters.	
Dover.....	1/2 doz \$1.50
National.....	1/2 doz \$4.50.....35¢5¢
Family (T. & S. Mfg. Co.).....	1/2 doz \$17.00
18.00.....	
Duplex (Standard Co.).....	1/2 doz \$15.00
Rival (Standard Co.).....	1/2 doz \$12.00
Large Duplex (Standard Co.).....	1/2 doz \$4.50
Triumph (T. & S. Mfg. Co.).....	1/2 doz \$10.50
11.50.....	
Advance, No. 1.....	1/2 doz \$10.50
Advance, No. 2.....	1/2 doz \$10.00
Bryant's.....	1/2 doz \$14.00
Ayres' Spiral.....	1/2 doz \$5.00
Double (H. & R. Mfg. Co.).....	1/2 doz \$16.20
Easy (H. & R. Mfg. Co.).....	1/2 doz \$14.00
Triple (H. & R. Mfg. Co.).....	1/2 doz \$16.20
Spiral (H. & R. Mfg. Co.).....	1/2 doz \$4.50
Paine, Diehl & Co.'s.....	1/2 doz \$24.00
Egg Poachers—	
Buffalo Steam Egg Poachers, 1/2 doz, No. 1.....	\$6.00; No. 2, \$9.00.....25¢
Electric Bell Sets.—	
Wollensak's.....	20¢
Bigelow & Downes.....	20¢
Emery—No. 4 to No. 54 to Flour CF	
46 gr.....	150 gr.....
150 gr.....	5¢
5¢.....	2 1/2¢
1/2 kg, 1/2 doz.....	5¢4¢
1/2 kg, 1/2 doz.....	5¢4¢
1/2 kg, 1/2 doz.....	5¢4¢
10 lb cans, 10.....	6¢
10 lb cans, less.....	6¢4¢
than 10.....	10¢
7 1/2¢.....	
Enameled and Tinned Ware—	
See Hollow Ware.	
Escatchoon Pins—	
Iron, list Nov. 11, 1885.....	50¢10¢50¢10¢5¢
Brass.....	60¢60¢5¢
Escutcheons.	
Door Lock.....	Same dis as Door Locks.
Brass Thread.....	60¢60¢10¢
Wood.....	25¢
Faucets.—	
Fenn's.....	40¢
Bahren's Pat. Rubber Ball.....	25¢
Fenn's Cork Stops.....	33¢4¢
Star.....	60¢
Frary's Pat. Petroleum.....	40¢5¢2¢
B. & L. B. Co.....	50¢
West's Lock, Open and Shut Key.....	50¢
Star, Metal Plug, new list.....	40¢
Lockport, Metal Plug, reduced list.....	60¢
Metallic Key, Leather Lined.....	60¢10¢
60¢10¢10¢	
Cork Lined.....	70¢5¢70¢10¢
Burnside Red Cedar.....	50¢10¢
Burnside Red Cedar, bbl lots.....	50¢10¢
John Sommers'.....	
Peerless Best Block Tin Key.....	40¢
IXL, 1st quality, Cork Lined.....	50¢
Diamond Lock.....	40¢
Perfection, Fla. Red Cedar.....	50¢
Goodenough Cedar.....	50¢
Boss Metallic Key.....	50¢
Reliable Cork Lined.....	60¢
Western Pattern Cork Lined.....	50¢
Self-Measuring.....	20¢10¢
Enterprise, 1/2 doz \$50.00.....	25¢10¢
Lanc's 1/2 doz \$36.00.....	25¢10¢
Victor, 1/2 doz \$36.00.....	25¢10¢
Felloe Plates.....	
1/2 doz, 6¢4¢	
Fifth Wheels.—	
Derby and Cincinnati.....	45¢5¢
Files—	
Domestic.....	
Nicholson Files, Rasps, &c.....	60¢10¢60¢10¢5¢
Nicholson (X. F.) Files.....	25¢
Nicholson's Royal Files (Seconds).....	75¢
(extra prices on certain sizes).....	
Other makers, best brands.....	60¢10¢60¢10¢10¢
Fair brands.....	60¢10¢10¢70¢
Second quality.....	70¢10¢75¢10¢
Nicholson's Horse Rasps.....	60¢10¢60¢
10¢5¢	
Heller's Horse Rasps.....	50¢7¢60¢10¢
McCaffrey's Horse Rasps.....	50¢10¢
Shepard's Horse Rasps, Hand Cut.....	50¢10¢
Imported.....	
J. & Riley Carr.....	list, April 1, 1883, 15¢
J. & Riley Carr Horse Rasps.....	10¢
Moss & Gamble.....	list, April 1, 1883, 15¢
Butcher.....	Butcher's list, 25¢30¢
Stubs.....	Stubs list, 25¢30¢
Turton.....	Turton's list, 25¢30¢
Greaves' Horse Rasps, American list, 60¢	
Fluting Machines—	
Knox, 1/4-inch Rolls.....	\$3.25 each } 35¢
Knox, 1/2-inch Rolls.....	\$3.60 each } 35¢
Eagle, 3/4-inch Roll.....	\$2.15.....35¢
Eagle, 5/8-inch Roll.....	\$2.85.....35¢
Crown, 1/4 in., \$3.50; 6 in., \$4.00; 8 in.....	\$6.50 each.....35¢
Crown Jewel, 6 in.....	\$3.50 each, 35¢
American, 5 in., \$3.00; 6 in., \$3.40; 7 in.....	\$4.50 each.....35¢
Domestic Fluter.....	each, \$1.50
Geneva Hand Fluter, White Metal.....	1/2 doz \$12, 25¢
12.50; 3, \$10.00.....	2
Shepard Hand Fluter, No. 85.....	1/2 doz \$15.30.....40¢
Shepard Hand Fluter, No. 110.....	1/2 doz \$11.00.....40¢
Shepard Hand Fluter, No. 96.....	1/2 doz \$8.00.....40¢
Clark's Hand Fluter.....	1/2 doz \$15.00.....35¢
Combined Fluter and Sad Iron.....	1/2 doz \$15.00.....30¢
Buffalo.....	1/2 doz \$10.00.....10¢
Fluting Scissors.....	
45¢	
Fodder Squeezers—	
Blair's.....	1/2 doz \$2.00
Blair's "Climax".....	1/2 doz \$1.25
Forks—	
Hay, Manure, &c., Asso. List.....	65¢
Hay, Manure, &c., Phila. List.....	60¢60¢5¢
Plated, see Spoons.	
Freezers, Ice Cream—	
Buffalo Champion.....	65¢65¢5¢
Shepard's Lightning.....	65¢ 65¢5¢
White Mountain.....	50¢20¢5¢
New Arctic.....	50¢40¢5¢
American.....	65¢
Gem.....	65¢
Blizzard.....	70¢
Double Action Crown.....	60¢
Crown.....	60¢
Star.....	60¢
Peerless and Giant.....	60¢10¢
Zero and Pe.....	65¢10¢10¢
Boss.....	65¢10¢10¢
Keystone, each, 1.50.....	25¢
Fruit and Jelly Presses—	
Enterprise Mfg. Co.....	20¢10¢30¢
Hens.....	1/2 doz \$2.50
Shepard's Queen City.....	40¢
Fry Pans—	
High List.....	75¢5¢75¢10
No. 1.....	5
No. 2.....	6
No. 3.....	

Cross-Cut Saw Handles—
 Atkins' No. 1 Loop, pair, 28¢; No. 3, 18¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
 Boynton's Loop Saw Handles, 50¢... 60¢
 Champion..... 15¢

Hangers
 Barn Door, old patterns..... 60¢10¢10¢70¢
 Barn Door, New England, 60¢10¢10¢70¢
 Samson Steel Anti-Friction..... 55¢
 Orleans Steel..... 55¢
 Hamilton Wrought Wood Track..... 55¢
 U. S. Wood Track..... 65¢
 Champion..... 80¢10¢
 Rider and Wooster, Medina Mfg. Co.'s
 List..... 70¢
 Climax Anti-Friction..... 60¢
 Climax Anti-Friction for Wood Track..... 55¢
 Zenith for Wood Track..... 55¢
 ed's Steel Arm..... 50¢
 allenge, Barn Door..... 50¢
 Sterling's Improved (Anti-Friction) 65¢10¢
 Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00..... 50¢2¢
 Cheritree..... 50¢10¢
 Kidder's..... 50¢10¢60¢
 The Boss..... 60¢10¢
 Best Anti-Friction..... 60¢10¢
 Duplex (Wood Track)..... 60¢10¢5¢
 Terry's Pat., # doz pr. 4 in, 10 in, 5 in, 12 in..... 50¢5¢50¢10¢
 Cronk's Pat., No. 4, \$12.00; No. 5, \$14.40; No. 6, \$18.00..... 50¢15¢60¢
 Wood Track Iron Clad, # ft. 10..... 15¢60¢
 Carrier Steel Anti-Friction..... 50¢50¢55¢
 Architect, # set \$6.00..... 20¢
 Eclipse..... 20¢10¢
 Felix, # set \$4.50..... 20¢
 Richards..... 30¢30¢10¢
 Lane's Steel Anti-Friction..... 30¢
 Ball Bearing Door Hanger, 20¢10¢25¢10¢
 Warner's Pat..... 20¢20¢10¢
 Stearns' Anti-Friction..... 20¢20¢10¢
 Stearns' Challenge..... 25¢10¢25¢10¢10¢
 Faultless..... 40¢40¢5¢
 American, # set \$6.00..... 20¢10¢
 Rider & Wooster, No. 1, 62¢; No. 2, 75¢..... 40¢
 Paragon, Nos. 1, 2 and 3..... 40¢10¢
 Paragon, Nos. 5, 5½, 7 and 8..... 20¢10¢
 Crescent..... 60¢60¢10¢
 Nickel, Cast Iron..... 40¢
 Nickel, Malleable Iron and Steel..... 40¢
 Scranton Anti-Friction Single Strap, 33¢
 Scranton Anti-Friction Double Strap, 40¢
 Universal Anti-Friction..... 40¢
 Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00..... 45¢
 Star..... 50¢5¢50¢10¢
 May..... 50¢5¢50¢10¢
 Barry, #6.00..... 40¢10¢

Harness Snaps— See Snaps.

Hatchets
 List Jan. 1, 1886..... 35¢40¢
 Hunt's Shingling, Lath and Claw..... 40¢5¢
 Hunt's Broad..... 40¢
 Buffalo Hammer Co..... 40¢10¢50¢
 Hurd's..... 40¢10¢50¢
 Fayette R. Plumb..... 40¢10¢50¢
 Wm. Mann, Jr., & Co..... 50¢50¢5¢
 Underhill Edge..... 40¢10¢50¢
 Underhill's, Haines and Bright..... 30¢
 C. Hammond & Son..... 40¢10¢50¢
 Simmons..... 40¢10¢50¢
 Peck's..... 40¢10¢40¢10¢5¢
 Kelly's..... 50¢50¢50¢
 Sargent & Co..... 40¢10¢40¢10¢
 Ten Eyck Edge Tool Co., 40¢10¢40¢10¢
 Collins..... 50¢
 Schulte, Lohoff & Co..... 50¢50¢55¢

Hay and Straw Knives
 Lightning, Mfrs. price \$2.00, 25¢
 But jobbers frequently give extras.
 Gem..... \$2.00
 Wadsworth's..... 40¢75¢40¢10¢
 Carter's Needle..... \$2.00
 Heath's..... \$2.00
 Auburn Hay, Com. and Spear Point..... 50¢
 Auburn, Straw..... 40¢
 Nolin's Hay..... \$2.00

Hinges
Wrought Iron Hinges
 Strap and T..... 75¢5¢75¢10¢
 Screw Hook and..... 14 to 30 in., # B..... 34¢
 Strap..... 22 to 30 in., # B..... 24¢
 Heavy Welded..... 14 to 20 in., # B..... 34¢
 Hook..... 22 to 30 in., # B..... 24¢
 Screw Hook..... ½ in., # doz \$1.50
 and Eye..... ¾ in., # doz \$2.45; 1 in., # doz \$3.80
 Rolled Blind Hinges, Nos. 22 and 24..... 50¢10¢
 Rolled Blind Hinges, Nos. 22 and 24..... 55¢10¢
 Rolled Plate..... 70¢10¢
 Rolled Raised..... 70¢10¢
 Plate Hinges, 8, 10 and 12 in., # B..... 55¢
 "Providence" over 12 in., # B..... 45¢

Spring Hinges
 Geer's Spring and Blank Butts..... 40¢
 Union Spring Hinge Co.'s list, March, 1886..... 30¢
 A. S..... 30¢
 U. S..... 30¢
 Empire and Crown..... 20¢
 Hero and Monarch..... 55¢
 American, Gem, and Star..... 20¢
 Oxford..... 20¢
 Barker's Double Acting..... 20¢10¢
 Union Mfg. Co..... 20¢
 Bommer's..... 30¢
 Buckman's..... 15¢20¢
 Chicago..... 30¢
 Wiles..... 10¢
 Devore's..... 10¢
 Rex..... 40¢
 Royal..... 40¢
 Reliable..... 60¢
 Champion..... 60¢

Gate Hinges
 Western..... \$2.00
 N. E..... \$2.00
 N. E. Reversible..... \$2.00
 Clark's, Nos. 1, 2, 3..... 60¢10¢5¢
 N. Y. State..... \$2.00
 Automatic..... \$2.00
 Common Sense..... \$2.00
 Seymour's..... 45¢10¢
 Shepard's..... 60¢10¢5¢
 Reed's Latch and Hinges..... \$2.00

Blind Hinges
 Parker..... 75¢2¢
 Palmer..... 50¢5¢10¢
 Seymour..... 70¢2¢
 Nicholson..... 45¢10¢
 Huffer..... 50¢

Clark's, Nos. 1, 3, 5, 40 and 50..... 75¢10¢5¢80¢
 Clark's Mortise Gravity..... 50¢
 Sargent's, Nos. 1, 3, 5, 11, 13..... 75¢10¢55¢10¢5¢
 Reading's Gravity..... 75¢10¢75¢10¢5¢
 Shepard's..... 75¢10¢5¢
 Noiseless..... 75¢10¢5¢
 Niagara..... 80¢2¢
 Buffalo..... 80¢5¢
 Clark's Genuine Pat..... 80¢5¢
 O. S. Lull & Porter..... 75¢10¢80¢
 Acme, Lull & Porter..... 75¢5¢
 Queen City Reversible..... 75¢
 Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 3..... 75¢10¢2¢
 North's Automatic Blind Fixtures, No. 2, for Wood, \$10.50; No. 3, for Brick, \$13.50..... 25¢2¢

Hoes—

Handled—
 Garden, Mortar, &c..... 65¢
 Planter's, Cotton, &c..... 65¢
 Warren Hoe..... 60¢
 Magic..... \$2.00

Eye—

D. & H. Scovill..... 20¢
 Lane's Crescent Planter's Pattern..... 45¢5¢
 Lane's Razor Blade, Scovill Pattern..... 45¢5¢
 Maynard, S. & O. Pat..... 45¢5¢
 Sandusky Tool Co., S. & O. Pat..... 60¢
 Hubbard & Co., S. & O. Pat..... 60¢
 Chattanooga Tool Co., S. & O. Pat..... 60¢60¢10¢
 Grub..... 60¢60¢10¢

Hog Rings and Ringers—

Hill's Improved Ringers..... \$2.00
 Hill's Old Style Ringers..... \$2.00
 Hill's Tongue..... \$2.00
 Hill's Ringers..... \$2.00
 Perfect Ringers..... \$2.00
 Perfect Ringers..... \$2.00
 Blair's Hog Ringers..... \$2.00
 Blair's Hog Ringers..... \$2.00
 Hampton Ringers..... \$2.00
 Hampton Ringers, Double..... \$2.00
 Brown's Ringers..... \$2.00
 Brown's Ringers..... \$2.00

Hoisting Apparatus—

Moore's Hand Hoist, with Lock..... 30¢
 Brake..... 40¢
 Moore's Differential Pulley Block..... 40¢
 Energy Mfg. Co.'s..... 25¢

Holders, File and Tool—

Balz Pat..... \$2.00
 Nicholson File Holders..... 20¢

Hollow-Ware—

Iron—
 Stove Hollow-Ware—
 Ground..... 60¢60¢5¢
 Unground..... 60¢10¢60¢10¢10¢
 Boilers and Saucepans..... 40¢5¢
 Tinned Boilers and Saucepans..... 40¢
 Gray Enamelled-Ware—
 Maslin Kettles..... 45¢50¢
 Maslin Boilers and Saucepans..... 40¢5¢
 Agate and Granite Ware, list Jan. 1, 1889..... 33¢10¢
 Rustless Hollow-Ware..... 50¢50¢5¢
 Galvanized Tea-Kettles—
 Inch..... 6 7 8 9
 Each..... 55¢ 60¢ 65¢ 75¢

Silver Plated—

Reed & Barton..... 4 mo. or 5 cash in 30 days.
 Meriden Britannia Co..... 40¢5¢
 Simpson, Hall, Miller & Co..... 40¢5¢
 Rogers & Brother..... 40¢5¢
 Hartford Silver Plate Co..... 40¢5¢
 William Rogers Mfg. Co..... 40¢5¢5¢

Hooks—

Cast Iron—
 Bird Cage, Sargent's list..... 60¢10¢10¢
 Bird Cage, Reading..... 60¢10¢10¢
 Clothes Line, Sargent's list..... 60¢10¢10¢
 Clothes Line, Reading list..... 60¢10¢10¢
 Ceiling, Sargent's list..... 50¢10¢10¢
 Harness, Reading list..... 50¢10¢10¢
 Coat and Hat, Sargent's list..... 55¢10¢60¢10¢
 Coat and Hat, Reading..... 50¢10¢50¢10¢10¢
Wrought Iron—
 Cotton..... \$2.00
 Cotton Pat. (N. Y. Mallet & Handle Wks.)..... 30¢
 Tassel and Picture (T. & S. Mfg. Co.)..... 50¢
 Wrought Staples, Hooks, &c..... See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886..... 50¢
 Wire Coat and Hat, Miles, list April, 1886..... 50¢
 Indestructible Coat and Hat..... 45¢
 Wire Coat and Hat, Standard..... 45¢
 Belt..... 80¢80¢10¢
Miscellaneous
 Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50
 Nolin's Grass..... \$2.00
 Bush..... 55¢60¢
 Whitcomb—Patent..... 55¢
 Hooks and Eyes—Malleable Iron..... 70¢70¢10¢
 Hooks and Eyes—Brass..... 60¢10¢10¢
 Fish Hooks, American..... 50¢
 Bench Hooks..... See Bench Stops.

Horse Nails—

Nos. 6 7 8 9 10
 Ausable..... 25¢25¢25¢24¢23¢
 Clinton, Fin..... 25¢10¢25¢10¢10¢
 Essex..... 25¢25¢25¢24¢23¢
 Lyra..... 25¢23¢23¢21¢20¢
 Snowden..... 25¢23¢23¢21¢20¢
 Putnam..... 25¢23¢23¢21¢19¢
 Vulcan..... 23¢21¢20¢19¢18¢
 Northwest..... 23¢21¢20¢19¢18¢
 Globe..... 23¢21¢20¢19¢18¢
 Boston..... 23¢21¢20¢19¢18¢
 A. C..... 25¢23¢23¢21¢20¢
 C. B.-K..... 25¢23¢23¢21¢20¢
 Champlain..... 25¢23¢23¢21¢20¢

New Haven..... 28¢25¢25¢24¢23¢
 Saranac..... 23¢21¢20¢19¢18¢
 Champion..... 25¢23¢23¢21¢20¢
 Capewell..... 28¢25¢25¢24¢23¢
 Star..... 23¢21¢20¢19¢18¢
 Aschor..... 23¢21¢20¢19¢18¢
 Western..... 23¢21¢20¢19¢18¢
 Empire Bronze..... 14¢
Horse Shoes—See Shoes Horse.

Hose, Rubber—

Competition..... 75¢10¢75¢10¢5¢
 Standard..... 70¢70¢10¢
 Extra..... 60¢60¢10¢
 N. Y. B. & P. Co., Para..... 30¢10¢
 N. Y. B. & P. Co., Extra..... 50¢
 N. Y. B. & P. Co., Dundee..... 60¢10¢5¢

Huskies—

Blair's Adjustable..... \$2.00
 Blair's Adjustable Clipper..... \$2.00

Indurated Fiber-Ware—25¢.

Spittons, No. 2, # doz..... \$2.00
 Basins, Ringed, # doz., No. 1, \$4.80; No. 2, \$4.20; No. 3, \$3.60
 Washbuts, Nested, Nos. 0, 1, 2 and 3 (4 pieces), # nest..... \$7.50
 Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), # nest..... \$3.70
 Butter Bowls 15, 17 and 19-inch (3 pieces), # nest..... \$2.25
 Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces), # set..... \$4.00
 Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), # set..... \$3.00
 See also *Patls.*

Jack Screws—See Screws.

Kettles— Spun, Stamped.
 Brass, 7 to 17 in., # B..... 24¢ 21¢
 Brass larger than 17 in., # B..... 26¢ 23¢
 Enamelled and Tea Kettles..... See Hollow-Ware.

Keys—

Lock Ass'n list Dec. 30, 1886..... 50¢10¢
 Eagle, Cabinet, &c..... 33¢2¢
 Hotchkiss' Brass Blanks..... 40¢
 Hotchkiss, Copper and Tinned..... 40¢
 Hotchkiss' Pad, and Cab..... 35¢
 Ratchet Bed Keys..... \$2.00, 15¢
 Wollensak Tinned..... 50¢10¢

Knife Sharpeners—

Parkin's.....
 Applewood Handles..... \$2.00, 40¢
 Rosewood or Cocobolo..... \$2.00, 40¢

Knives—

Wilson's Butcher Knives..... 25¢30¢
 Ames' Butcher Knives..... 25¢
 Foster Bros' Butcher, &c..... 40¢
 Nichols' Butcher Knives..... 40¢10¢
 Ames' Shoe Knives..... 20¢25¢
 Ames' Bread Knives..... \$2.00, 15¢
 Moran's Shoe and Bread..... 20¢
 Ray and Fock..... See Ray knives.
 Table and Pocket..... See Cutlery.
 Corn, Auburn Mfg. Co. Western Pat..... \$2.00
 Corn, Auburn Mfg. Co. Crescent..... \$3.50

Knobs—

Door Mineral..... 65¢68¢
 Door Por. Nickel..... \$2.00, 2.25
 Door Por. Plated, Nickel..... \$2.00, 2.25
 Drawer, Porcelain..... 60¢10¢60¢10¢10¢
 Hemacite Door Knobs..... 40¢10¢50¢
 Yale & Towne Wood, list Dec. 1885..... 40¢
 Furniture Wood Screws..... 75¢ gro inch, 10¢
 Base, Rubber Tip..... 70¢10¢5¢
 Picture, Judd's..... 50¢10¢10¢70¢
 Picture, Sargent's..... 70¢10¢
 Picture, Hemacite..... 35¢5¢
 Shutter, Porcelain..... 65¢10¢
 Carriage, Jap..... \$2.00, 60¢10¢

Ladles—

Melting, Sargent's..... 55¢10¢
 Melting, Reading..... 35¢10¢
 Melting, Monroe's Pat..... \$2.00, 40¢
 Melting, P. S. & W..... 35¢10¢40¢
 Melting, Warner's..... 30¢

Lawn Mowers—

Standard List..... 50¢10¢
 Quaker City..... 60¢10¢
 Enterprise..... 60¢10¢

Lanterns—

Tubular
 Plain with Guards, # doz..... \$4.00, 4.25
 Lift Wire, with Guards..... \$4.50, 4.75
 Square Plain, with Guards..... \$4.00, 4.25
 Sq. Lift Wire, with Guards..... \$4.25, 4.50
 Without Guards, 25¢ # doz less.
Miscellaneous
 Police, Small, \$6.00; Medium, \$7.25; Large, \$8.75..... 20¢25¢

Lemon Squeezers—

Porcelain Lined, No. 1..... \$2.00, 2.50
 Wood, No. 2..... \$2.00, 3.50
 Wood, Common..... \$2.00, 1.75
 Dunlap's Improved..... \$2.00, 3.75, 20¢
 Sammis..... No. 1, \$5.00; No. 2, \$6.00; No. 3, \$7.00
 Jennings' Star..... \$2.00, 2.50
 The Boss..... \$2.00, 2.50
 Dean's..... No. 1, \$2.00, 2.50; No. 2, \$3.35; No. 3, \$4.00
 Little Giant..... 50¢50¢5¢
 King..... 40¢5¢

Lines—

Cotton and Linen Fish, Draper's..... 50¢
 Draper's Chalk..... 60¢
 Draper's Masons' Linen, 84 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25..... 25¢
 Cotton Chalk..... 50¢
 Samson, Cotton, No. 4, \$2.00; No. 4½, \$2.50; No. 5, \$3.00
 Silver Lake, Braided, No. 0, \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50
 Mason's Linen, No. 3½, \$1.50; No. 4, \$2.00; No. 4½, \$2.50; No. 5, \$3.00
 Mason's Colored Cotton..... 40¢
 Wm. Clothes..... Nos. 18 19 20
 \$3.00 \$3.00 \$3.00

Ventilator Cord, Samson Braided, White or Drab Cotton, # doz \$7.50, 20¢

Locks, &c.—

Door Locks, Latches, &c.
 List Dec. 30, '86, chgd Feb. 2, '87..... 50¢10¢60¢10¢
 R. & E. Mfg. Co., list Mar. 20, 1889..... 60¢10¢
 Mallory, Wheeler & Co., list July, '88..... 50¢10¢60¢10¢
 Sargent & Co., list Aug. 1, '88..... 55¢2¢
 Reading Hardware Co., list Feb. 2, '88..... 55¢60¢10¢
Note—Lower net prices often made.
 Perkins' Burglar Proof..... 60¢25¢
 Plate..... 33¢2¢
 F. Many's "Extension Cylinder" \$10.50
 # doz.
 Barnes Mfg. Co..... 40¢40¢10¢
 Yale..... net price
 Delta Flat Key..... 30¢
 L. & C. Round Key Latches..... 30¢10¢
 L. & C. Flat Key Latches..... 33¢10¢
 Romer's Night Latches..... 15¢
 Shephardson or U. S..... 35¢
 Felter or American..... 40¢10¢
 Seed's N. Y. Hasp Lock..... 25¢

Cabinets—

Eagle, Gaylord Par..... list March, '84, rev. ker and Corbin..... Jan. 1, '85, 33¢2¢
 Delta, Nos. 36 to 39..... 40¢
 Delta, Nos. 51 to 63..... 40¢10¢
 Delta, Nos. 86 to 96..... 30¢
 Stoddard Lock Co..... 30¢33¢
 "Champion" Night Latches..... 40¢40¢10¢
 Barnes Mfg. Co..... 40¢40¢10¢
 Eagle and Corbin Trunk..... 25¢2¢
 "Champion" Cab. and Combin..... 33¢2¢
 Yale..... net prices
 Romer's..... 25¢

Padlocks—

List Dec. 23, '84..... 75¢75¢10¢
 Yale Lock Mfg. Co.'s..... net prices
 Eagle..... 25¢
 Eureka, Eagle Lock Co..... 40¢2¢
 Romer's, Nos. 0 to 91..... 30¢
 Romer's Scandinavian, &c., Nos. 100 to 505..... 15¢
 A. E. Delta..... 40¢
 Champion Padlocks..... 40¢
 Hotchkiss..... 30¢
 Star..... 45¢
 Horseshoe..... \$2.00, 40¢40¢10¢
 Barnes Mfg. Co..... 40¢40¢10¢
 Nock's..... 30¢
 Brown's Pat..... 30¢40¢10¢
 Scandinavian..... 30¢40¢10¢
 Fram's Pat. Scandinavian low list..... 60¢
 Ames Sword Co. up to No. 150..... 40¢
 Ames Sword Co. above No. 150..... 50¢

Lumber Tools.

Ring Peavies, "Blue Line"..... \$2.00, 20¢
 Ring Peavies, Common..... \$2.00, 18¢
 Steel Socket Peavies..... \$2.00, 21¢
 Mail, Iron Socket Peavies..... \$2.00, 19¢
 Cant Hooks, "Blue Line"..... \$2.00, 16¢
 Cant Hooks, Common Finish..... \$2.00, 14¢
 Cant Hooks, Mail, Socket Clasp, "Blue Line" Finish..... \$2.00, 16¢
 Cant Hooks, Mail, Socket Clasp, Common Finish..... \$2.00, 14¢
 Cant Hooks, Clip Clasp, "Blue Line" Finish..... \$2.00, 14¢
 Cant Hooks, Clip Clasp, Common Finish..... \$2.00, 12¢
 Hand Spikes..... \$2.00, 15¢; 18¢; 21¢
 Pike Poles, Pike & Hook, # doz., 12 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50
 Pike Poles, Pike only, # doz., 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00
 Pike Poles, not ironed, # doz., 12 ft., \$6.00; 14 ft., \$7.00; 16 ft., \$8.00; 18 ft., \$12.00; 20 ft., \$16.00
 Settling Poles, # doz., 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00
 Swamp Hooks..... \$2.00, 18¢

Lustro—

Four-ounce Bottles..... \$2.00, 1.75; # gross..... \$17.00

Mallets—

Hickory..... 20¢10¢20¢10¢10¢
 Lignumvite..... 20¢10¢20¢10¢10¢
 B. & L. Block Co., Hickory & L. V..... 30¢30¢10¢

Match Safes—

Dangerfield's Self-Igniting..... \$2.00, 1.50

Mattocks, Regular list..... 50¢10¢5¢60¢

Meat Cutters—

Dixon's # doz..... 40¢5¢
 Nos..... 1 2 3
 \$14.00 \$17.00 \$20.00
 Woodruff's # doz..... 40¢5¢
 Nos..... 100 150
 \$15.00 \$18.00

Champion # doz..... 40¢45¢

Nos..... 20 30 40
 \$22.00 \$27.00 \$30.00
 Hales Pattern # doz..... 70¢70¢5¢
 Nos..... 11 12 13
 \$27.00 \$33.00 \$45.00

American..... 30¢
 Nos..... 1 2 3 4 B 5
 Each..... \$5 \$7 \$10 \$25 \$50 \$80
 Enterprise..... 30¢
 Nos..... 10 12 22 32 42
 Each..... \$3 \$2.50 \$4 \$6 \$15

Pennsylvania..... 40¢10¢
 Nos..... 1 2 3 00
 \$24.00 \$24.00 \$38.00 \$28.00
 Miles' Challenge # doz..... 45¢45¢10¢
 Nos..... 1 2 3
 \$22.00 \$30.00 \$40.00

Home No. 1..... \$2.00, 2.50, 55¢10¢
 Draw Cut, each:
 Nos..... 5 2 6 8
 \$50 \$75 \$80 \$225..... 20¢25¢

Beef Shavers (Enterprise)..... 20¢10¢30¢
 Chabourn's Smoked Beef Cutter..... \$2.00

Mining Knives—

Am. (2d quality), # gr., 1 blade, \$7; 2 blades, \$12; 3 blades, \$18..... net
 Lothrop's..... 20¢10¢
 Smith's, # doz, Single, \$2.00; Double, \$3.00
 Knapp & Cowles..... 5

Machine—

Flat Head, Iron.....55¢
Round Head, Iron.....50¢

Bench and Hand—

Bench, Iron.....55¢10¢50¢10¢10¢
Bench, Wood, Beech.....50¢10¢
Bench, Wood, Hickory.....50¢10¢
Hand, Wood.....25¢10¢25¢10¢5¢
Lag, Blunt Point, according to size.....80¢80¢5¢
Coach and Lag, Gimlet Point.....75¢
Bed.....25¢5¢
Hand Rail, Sargent's.....60¢10¢
Hand Rail, H. & B. Mfg. Co.....70¢10¢75¢
Hand Rail, Am. Screw Co.....75¢
Jack Screws, Millers Falls list.....50¢50¢5¢
Jack Screws, P. S. & W.....35¢
Jack Screws, Sargent.....60¢10¢60¢10¢5¢
Jack Screws, Stearns.....40¢40¢10¢

Scroll Saws—

Lester, complete, \$10.00.....25¢
Rogers, complete, \$4.00.....25¢
Barnes' Builders' and Cabinet Makers'.....\$15.
Barnes' Scroll Saw Blades.....35¢

Scythe Snaths—

American (Cast) Iron.....75¢10¢75¢10¢5¢
Pruning, See Pruning Hooks and Shears.
Barnard's Lamp Trimmers.....\$3.25
Timmers.....30¢2¢
Seymour's, List, Dec. 1881.....60¢10¢10¢60¢10¢10¢5¢
Heinrich's, List, Dec. 1881.....60¢10¢10¢60¢10¢10¢5¢
Heinrich's Tailor's Shears.....10¢
First quality C. S. Trimmers.....80¢80¢10¢
Second quality C. S. Trimmers.....80¢10¢80¢10¢10¢

Shears—

Acme Cast Shears.....10¢10¢
Diamond Cast Shears.....10¢
Clippers.....10¢
Victor Cast Shears.....75¢10¢75¢10¢5¢
Howe Bros. & Hulbert, Solid Forged Steel.....40¢
Chicago Drop Forge & F. Co., Solid Steel Forged.....60¢
Clausen Shear Co., Japanned.....70¢
Clausen Shear Co., Nickel, same list.....90¢

Sheaves—

Sliding Door—
M. W. Co., list July, 1888.....50¢10¢60¢5¢
R. & E., list Dec. 18, 1885.....50¢20¢
Corbin's list.....60¢10¢2¢
Patent Roller.....60¢10¢2¢
Patent Roller, Hatfield's.....75¢
Russell's Anti-Friction, list Dec. 18, 1885.....60¢2¢
Moore's Anti-Friction.....50¢

Sliding Shutter—

R. & E. list Dec. 18, 1885.....60¢10¢2¢
Sargent's list.....60¢10¢2¢
Reading list.....60¢10¢10¢

Ship Tools—

L. & I. J. White.....20¢5¢
Albertson Mfg. Co.....25¢

Shoes, Horse, Mule, &c.—

Horse—
Burden's, Perkins', Phoenix, at factory.....\$4.00
Mule—
Add \$1 per keg to above prices.

Ox, Wrought—

Ton lots.....\$10 9¢
1000 lb lots.....\$10 9¢
500 lb lots.....\$10 9¢

Shot—

(Eastern prices 2¢ off, cash, 5 days.)
Drop, ½ bag, 25 lb.....\$1.25
Drop, ½ bag, 5 lb......30
Buck and Chilled, ½ 25 lb bag.....1.50
Buck and Chilled, ½ 5 lb bag......35

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20¢
NOTE.—Jobbers frequently give 5¢ to 7½¢ extra on above.
Griffith's Black Iron.....50¢10¢
Griffith's C. S.....60¢60¢10¢
Griffith's Solid C. S. R. Goods.....20¢
Old Colony (Sanford Fork & Tool Co.).....20¢
St. Louis Shovel Co.....30¢20¢75¢
Hussey, Binns & Co.....15¢25¢
Hubbard & Co.....20¢20¢75¢
Lehigh Mfg. Co.....50¢10¢
Payne Pettibone & Son, list January, 1886.....30¢
Remington's (Lowman's) Pat. 30810¢40¢
Rowland's, Black Iron.....50¢10¢
Rowland's Steel.....60¢5¢60¢10¢

Shovels and Tongs—

Iron Head.....60¢10¢60¢10¢5¢
Brass Head.....60¢10¢10¢

Skins, Thimble—

Western list.....75¢5¢75¢10¢
Columbus Wrt. Steel, list Nov. 1, 1887.....20¢
Coldbrookdale Iron Co.....50¢10¢
Utica P. S. T. Skins.....60¢
Utica Turned and Fitted.....35¢

Sieves—

Buffalo Metallic, S. S. & Co.....50¢25¢10¢
Shaker (Barber's) Pat. Flour Sifters.....\$2.00
Electric.....\$2.00
Hunter's.....\$2.00
Smith's Adjustable Milk Strainer.....\$2.00
Smith's Adjustable T. & C. Strainer.....\$2.00

Sieves, Wooden Rim—

Mesh 18, Nested, ½ doz.....70¢ 90¢
Mesh 20, Nested, ½ doz.....85¢ 1.00
Mesh 24, Nested, ½ doz.....1.00 1.10

Slates—

School, by case.....40¢

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65¢
Fitch's (Bristol).....50¢10¢
Hotchkiss.....10¢
Andrews.....70¢10¢10¢
German, new list.....40¢10¢
Covert.....50¢2¢
Covert, New Patent.....60¢5¢2¢
Covert, New R. E.....80¢10¢2¢
Covert Spring.....60¢10¢10¢

Soldering Irons—

Covert's Adjustable, list Jan. 1, 1886.....35¢2¢

Spoke Shaves—

Iron.....45¢
Wood.....30¢
Bailey's (Stanley R. & L. Co.).....40¢10¢
Stearns.....20¢10¢30¢

Spoke Trimmers—

Bonney's.....\$ doz \$10.00, 50¢
Stearns.....20¢10¢
Ives, No. 1, \$15.00; No. 2, \$12.00 \$ doz.....55¢10¢
Douglas.....\$ doz \$9.00, 20¢

Spoons and Forks—

Tinned Iron—
Basting, Cen. Stamp. Co.'s list.....70¢10¢
Solid Table and Tea, Cen. Stamp. Co.'s list.....70¢10¢
Buffalo S. S. & Co.....33¢2¢
Silver-Plated—(4 mos. or 5¢ cash 30 days)

Meriden Brit. Co., Rogers.....50¢
C. Rogers & Bros.....50¢
Rogers & Bro.....50¢
Reed & Barton.....50¢
Wm. Rogers Mfg. Co.....50¢10¢60¢
Simpson, Hall, Miller & Co.....50¢10¢
Holmes & Edwards Silver Co.....60¢10¢5¢
L. Boardman & Son.....50¢10¢
Miscellaneous.
Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50¢10¢5¢
No. 30 Silver Metal.....50¢10¢5¢
No. 24 German Silver.....50¢10¢5¢
No. 50 Nickel Silver.....50¢
No. 49 Nickel Silver.....50¢10¢
German Silver.....50¢50¢5¢
German Silver, Hall & Elton.....50¢5¢ cash
Nickel Silver.....50¢5¢50¢10¢5¢ cash
Britannia.....60¢

Boardman's Nickel Silver—

Boardman's Britannia Spoons, case, 100 lots.....60¢

Springs—

Elliptic, Concord, Platform and Half Scroll.....60¢60¢5¢
Cliff's Bolster Springs.....25¢

Squares—

Steel and Iron.....75¢10¢80¢,
Nickel-Plated.....full cas. ex. 10¢
Try Square and T Bevels.....60¢10¢60¢10¢

Standard Fibre Ware—

Per Dozen. Plain. Dec'r'd
Wash-Basins, 10½ in.....\$2.00 \$2.25
Wash-Basins, 12 in.....2.25 2.75
Keelers, 11½ in.....4.00
Cuspidors.....8.00
Spittoons, "Daisy," 8 in.....4.00 4.50
Peck Measure.....4.00
Half-peck Measure.....3.50
See also Falls.

Staples—

Fence Staples, Galvanized.....Same price as B'r' Wire.
Fence Staples, Plain.....See Trl. Rep.

Steel Yards—

Blacksmith's.....30¢5¢30¢10¢
Waterford Goods.....30¢5¢30¢10¢
Butterfield's Goods.....25¢30¢
Lightning Screw Plate.....33¢5¢40¢
Reece's New Screw Plates.....30¢
Reversible Ratchet.....30¢

Stocks and Dies—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone.....\$10 2½¢
Washita Stone, Extra.....\$10 2½¢
Washita Stone, No. 1.....14¢15¢
Washita Stone, No. 2.....10¢11¢
Washita Slips, No. 1, Extra.....36¢38¢
Washita Slips, No. 1.....24¢25¢
Arkansas Stone, No. 1, 4 to 6 in.....\$1.50
Arkansas Stone, No. 1, 6 to 9 in.....\$1.85
Turkey Oil Stone, 4 to 9 in.....\$1.00
Turkey Slips.....\$1.00
Lake Superior, Chase.....\$1.00
Lake Superior Slips, Chase.....\$1.00
Seneca Stone, Red Paper Brand.....\$1.00

Stone—

Seneca Stone, High Rounds.....\$2.00
Seneca Stone, Small Whets.....\$2.00
Joseph Dixon's.....\$2.00
Gem.....\$2.00
Gold Medal.....\$2.00
Mirror.....\$2.00
Lustro.....\$2.00
Ruby.....\$2.00
Etching Stone.....\$2.00
Dixon's Plumbago.....\$2.00
Boynton's Noon Day.....\$2.00
Parlor Pride Stove Enamel.....\$2.00
Yates' Liquid.....\$2.00
Yates Standard Paste Polish, 10-lb. can.....\$2.00

Stove Polish—

Jet Black.....\$2.00
Japanese.....\$2.00
Firestone.....\$2.00
Diamond O. K. Enamel.....\$2.00
Bonnell's Liquid Stove Polish.....\$2.00
Bonnell's Paste Stove Polish.....\$2.00
Black Eagle Benzine Paste, 5 and 10 lb. cans.....12¢
Black Jack Water Paste, 5 and 10 lb. cans.....12¢
Nickel Plate Paste.....\$2.00

Tacks, Brads, &c.—

List, Jan. 2, 1888.—(Note.—Some manufacturers are selling Tacks at slightly higher prices than those named.)
American Iron Carpet.....80¢80¢5¢
Steel Carpet.....80¢80¢5¢
Swedes Iron Carpet.....80¢80¢5¢
American Iron Cut.....75¢75¢10¢
Swedes Iron, Upholsterers.....75¢10¢80¢
Tinned Swedes Iron, Upholsterers.....75¢10¢80¢
Gimp and Lace.....75¢10¢80¢
Tinned Gimp and Lace.....75¢10¢80¢
Swedes Iron Trimmers.....75¢10¢75¢10¢5¢
Swedes Iron Miners.....75¢10¢75¢10¢5¢
Swedes Iron Bill Posters or Railroad.....75¢10¢75¢10¢5¢

Swedes Steel (Swedes Iron price list),

80¢80¢5¢
Copper Tacks.....50¢10¢
Copper Finishing, Trunk and Clout Nails.....50¢10¢
Finishing Nails.....70¢10¢70¢10¢5¢
Trunk and Clout Nails.....70¢10¢70¢10¢5¢
Tinned Trunk and Clout Nails, 70¢10¢

Basket Nails.....70¢10¢70¢10¢5¢
Common and Patent Brads, 70¢10¢70¢10¢5¢
Hungarian Nails.....70¢10¢70¢10¢5¢
Chair Nails.....70¢10¢70¢10¢5¢
Zinc Glaziers' Points.....50¢50¢5¢
Clear Box Nails.....50¢10¢50¢10¢5¢
Picture-Frame Points.....50¢10¢50¢10¢5¢
Looking-Glass Tacks.....50¢10¢50¢10¢5¢
Leathered Carpet.....50¢10¢50¢10¢5¢
Brush Tacks.....50¢10¢50¢10¢5¢
Shoe Finders, List Jan. 2, 1888, 10¢10¢

Living and Saddle Nails, List Jan. 1, 1889.....30¢10¢10¢
Japanned.....20¢10¢10¢
Double-Pointed Tacks.....85¢
Wire Carpet Nails.....50¢10¢
Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50¢10¢

Tap Borers—

Common and Rind.....20¢10¢
Ive's Tap Borers.....33¢2¢
Enterprise Mfg. Co.....20¢10¢30¢
Clark's.....33¢2¢

Tapes, Measuring—

American.....25¢10¢
Spring.....40¢
Chesterman's, Regular list.....25¢30¢

Thermometers—

Tin Case.....80¢80¢10¢

Thimble Skeins—See Skeins.

Ties, Bale—Steel

Standard Wire, list.....50¢10¢5¢

Tinners' Shears, &c.—

Shears and Snips (P. S. & W.).....20¢25¢
Punches, see Punches.
Snips, J. Mallinson & Co.....33¢

Tinware—

Stamped, Japanned and P'ced, list Jan. 20 1887.....75¢75¢5¢

Tire Benders, Upsetters, &c—

Stoddard's Lightning Tire Upsetters.....15¢
Detroit Perfected Tire Bender.....15¢

Tobacco Cutters—

Champion.....20¢10¢30¢
Wood Bottom.....\$ doz \$5.00 \$5.25
All Iron.....\$ doz \$4.25
Nashua Lock Co.'s \$ doz, \$18.00 50¢55¢
Wilson's.....55¢
Sargent's.....\$ doz, \$24, 55¢10¢
Acme.....\$ doz, \$20.00, 40¢

Transom Lifters—

Wollensak's:
Class 3 and 4, Bronzed Iron.....50¢
Class 3 and 4, Bronze Metal.....25¢
Class 3 and 4, Brass.....35¢
Sight Lifters.....35¢
Crown, Eagle and Shield.....50¢
Rether's, list Jan. 1, 1887.....50¢10¢2¢
Brass, Real Bronze or Nickel Plate.....30¢
Excelsior.....50¢10¢2¢
Shaw's.....50¢10¢
Payson's Universal.....40¢40¢10¢

Traps—

Game—
Newhouse.....35¢40¢5¢
Oneda Pattern.....70¢70¢5¢
Game, Blake's Patent.....40¢10¢5¢
New and Rat.....40¢10¢5¢

Mouse Wood Choker, \$ doz holes, 11¢12¢
Mouse, Round Wire.....\$ doz \$1.50, 10¢
Mouse, Cage, Wire.....\$ doz \$2.50, 10¢
Mouse, Catch-em-alive.....\$ doz \$2.50, 10¢
Mouse, Bonanza.....\$ gr \$10.00, 10¢
Mouse Delusion.....\$ gr \$15.00, 10¢
Bat, Decoy.....\$ gr \$10.00, 10¢
Ideal.....\$ gr \$10.00, 10¢
Cyclone.....\$ gr \$5.25
Hotchkiss Metallic Mouse, 5-hole traps, \$ doz 90¢
In full cases.....\$ doz 75¢

Trowels—

Lothorp's Brick and Plastering.....25¢25¢5¢
Reed's Brick and Plastering.....15¢
Disston's Br'k and Plastering, 25¢25¢10¢
Peace's Plastering.....25¢
Clement & Maynard.....16¢ 20¢
Rose's Brick.....15¢20¢
Brad's Brick.....25¢
Worrall's Brick and Plastering.....20¢
Garden.....70¢

Trunks, Warehouse, &c.—

B. & L. Block Co.'s list '82.....40¢

Tables, Boiler—

See Pipe.

Twine—

Flax Twine.....BC. B.
No. 9, ¼ and ½ B. Balls.....22¢ 30¢
No. 12, ¼ and ½ B. Balls.....21¢ 20¢
No. 18, ¼ and ½ B. Balls.....18¢ 24¢
No. 24, ¼ and ½ B. Balls.....18¢ 25¢
No. 36, ¼ and ½ B. Balls.....16¢ 20¢
No. 264, Mattress, ¼ and ½ B. Balls.....48¢50¢
Chalk Line, Cotton, ¼ B. Balls.....25¢
Mason Line, Linen, ¼ B. Balls.....55¢
2-Ply Hemp, ¼ and ½ B. Balls (Spring Twine).....11¢
3-Ply Hemp, 1 B. Balls.....12¢12¢4¢
3-Ply Hemp, 1½ B. Balls.....11¢11¢4¢
Cotton Wrapping, 5 Balls to lb.....15¢10¢
2, 3, 4 and 5-Ply Jute, ½ B. Balls.....10¢
Wool.....6¢6¢4¢
Paper.....13¢14¢
Cotton Mops, 6, 9, 12 and 15 lb to dos.....18¢

Wires—

Solid Box.....60¢60¢5¢
Parallel—
Fisher & Norris Double Screw.....15¢10¢
Stechens.....25¢40¢
Parker's.....20¢25¢
Wilson's.....55¢
Howard's.....40¢
Bonney's.....40¢10¢
Millers Falls.....40¢40¢10¢
Trenton.....40¢50¢40¢10¢
Merrill's.....60¢10¢10¢
Sargent's.....15¢20¢
Backus and Union.....40¢
Double Screw Leg.....15¢10¢
Prentiss.....20¢25¢
Simpson's Adjustable.....40¢5¢
Moore's.....20¢

Save Filers—

Bonney's, Nos. 2 & 3, \$15.00.....40¢10¢
Stearns.....33¢4¢10¢33¢10¢10¢
Stearns' Silent Saw Vises.....33¢35¢
Sargent's.....60¢5¢10¢
Hopkins'.....\$ doz \$17.50, 10¢
Reading.....40¢10¢
Wentworth.....20¢10¢
Combination Hand Vises.....\$ gr \$42.00
Cowell Hand Vises.....20¢
Bauer's Pipe Vises.....10¢

Vises—

Solid Box.....60¢60¢5¢
Parallel—
Fisher & Norris Double Screw.....15¢10¢
Stechens.....25¢40¢
Parker's.....20¢25¢
Wilson's.....55¢
Howard's.....40¢
Bonney's.....40¢10¢
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Sargent's.....60¢5¢10¢
Hopkins'.....\$ doz \$17.50, 10¢
Reading.....40¢10¢
Wentworth.....20¢10¢
Combination Hand Vises.....\$ gr \$42.00
Cowell Hand Vises.....20¢
Bauer's Pipe Vises.....10¢

Wagon Boxes—

Per B.....2½¢

Wagon Jacks—

Daisy.....25¢

Washer Cutters—

Smith's Pat.....\$ doz \$12.00, 30¢10¢10¢
Johnson's.....\$ doz \$11.00, 33¢4¢
Fenny's \$ doz Pol. \$14; Jap'd, \$16.00, 55¢
Appleton's.....\$ doz \$16.00, 60¢10¢
Bonney's.....30¢10¢

Washers—

Size.....½ 5-16 ¾ ½ ¾ 1
Washers.....6½ 5½ 4½ 3½ 3 3 3
In lots less than 200 lb, \$ lb, add ½¢, 5-lb boxes 1¢ to list.

Wedges—

Iron.....\$ lb 3½¢
Steel.....\$ lb 4 ¢

Well Buckets, Galvanized—

Hill's.....\$ doz, 12 qt, \$4.25; 14 qt, \$5.25
Iron Clad.....\$ doz, 14 qt, \$4.25 \$4.50
Whiting's Flat Iron Band.....\$4.25 \$4.50
Whiting's Wired Top.....\$ doz \$4.00 \$4.25

Well Wheels—

8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25

Wire—

Market,
Br. & Ann., Nos. 0 to 18.....75¢75¢10¢
Cop'd, Nos. 0 to 18.....70¢70¢10¢
Galv., Nos. 0 to 18.....25¢10¢
Tin'd, Tinned list Nos. 0 to 18.....70¢
Stone,
Br. and Ann'd, Nos. 16 to 18, 72¢4¢
Bright and Ann'd, Nos. 19 to 26, 75¢4¢

Br. and Ann'd, Nos. 27 to 36.....80¢
Tinned.....70¢10¢75¢
Tinned Broom Wire.....70¢10¢75¢
Galvanized Fence.....65¢5¢
Annealed Fence, Nos. 8 and 9.....75¢5¢
Annealed Grape, Nos. 10 to 14.....75¢5¢
Brass, list Jan. 18, 1884.....25¢30¢
Copper, list Jan. 18, 1884.....30¢35¢
Barb Fence.....See Trade Report
Wire on Spools.....65¢
Mallin's Steel and Tin'd Wire on Spools.....40¢

Mallin's Brass and Cop. Wire on Spools 30¢
Cast Steel Wire.....50¢
Stub's Steel Wire.....\$6.00 to \$2.30
Steel Music Wire, Nos. 12 to 30, 55¢
Picture Wire.....New list, 50¢
Barb Wire Safety Guard.....\$ 1000, \$9.00, 25¢

Wire Clothes Lines, see Lines.

Wire Cloth, Netting, &c.—

Painted Screen Cloth, good quality,
100 sq. ft., \$1.80 @ \$1.90
Galvanized Wire Netting.....75¢75¢5¢

Wire Goods—

See Bright Wire Goods.

Wire Rope—

List May 1, 1886.
Iron.....30¢
Cast Steel.....40¢

Wrenches—

